Pacific Marine Science Report 75-8

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Pacific Region

USES OF AIRCRAFT AND BALLOON PHOTOGRAPHY IN STUDYING COASTAL AREAS

by

J.F.R. Gower

INSTITUTE OF OCEAN SCIENCES, PATRICIA BAY
Victoria, B.C.

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Environment Canada

Institute of Ocean Sciences, Patricia Bay

512 - 1230 Government Street

Victoria, B.C.

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ABSTRACT

Three examples of specialized aerial photography projects designed to back up oceanographic studies are described with examples of small format photography (35 mm and 70 mm), "fisheye" pictures, high level colour photography, thermal scanning, time lapse photography and photography from a balloon. Relative advantages of different methods are discussed and sample images are shown.

The report aims to show the variety of techniques available to support a study of a limited coastal area, and hence to demonstrate the values of aerial observations in such projects.

This report is based on a paper which was presented at the 63rd Statutory Meeting of I.C.E.S. in Montreal on 29 September 1975.

INTRODUCTION

This is not intended to be a complete survey of uses of aerial photography in coastal oceanography and hydrography. Such a paper might be useful to write, but there are so many examples that could be chosen, reflecting interests in many different specialities, that the end product would probably be difficult to follow and dull to present. I would prefer to pick out a few specific examples and discuss them in more detail.

Aerial photography is clearly a valuable mapping and reconnaissance tool, and any group of scientists studying the sea can probably benefit at some time by having access to aircraft and cameras. We have had a number of requirements at Ocean and Aquatic Sciences, Pacific Region (now the Institute of Ocean Sciences, Patricia Bay) which show a need for both standard mapping photography - the 9 inch square format normally provided by air photo companies - and also for a variety of small format 70 and 35 mm photographs for special purposes. In several cases the photographic work has pointed up the need for more specialized remote sensing techniques, and an example of thermal scanning imagery is shown below.

One example of a requirement for the 9 inch mapping photographs is in air photos to assist in chart construction for shoal detection and shoreline mapping. This is a requirement that we expect to increase as a result of a programme which is currently investigating the application of special purpose stereophotography to measurement of shallow water depths.

In a recent example of a smaller project, it was necessary to know whether a particular coastal marsh was accreting or eroding and what area of the marsh was under water at a given level of high tide. This is not exactly an oceanographic problem, but it seems to be the kind of problem that falls on the oceanographic community from time to time, at least in Canada. For answering the first question, historical mapping photography was available for the area from the B.C. Government's Air Photo Division. These photographs showed the outline of the marsh on three past occasions at roughly seven year intervals. For an estimate on how much of the marsh was water-covered at high tide, however, special photography was needed. Down-looking photographs cannot show up water over mud or among plant life in the marsh, but hand-held oblique 35 mm photographs from a light aircraft showed up the bright sky reflections from open water and gave a quick estimate of the water-covered area.

There are three main examples, each connected with programmes at our Institute, that I want to discuss in this report.

MAPPING THE FRASER RIVER PLUME

The first concerns a numerical model of the Georgia Strait. This is the body of water between Vancouver Island, on which our Institute is located, and the mainland. The Fraser River flows into the Strait just south of the city of Vancouver on the mainland, bringing in a large volume of fresh silty water and strongly affecting the properties of water in the Strait. For this reason, the distribution and mixing of Fraser River water is being studied as one of the boundary conditions of the numerical model.

Imagery from the LANDSAT-1 satellite can show the overall distribution of Fraser River water on the surface of the Georgia Strait. Figure 1(a) shows part of a frame from July 30, 1972 at a time of ebbing tide and Figure 1(b) shows the same scene on September 4, 1972 during a flood. Part of Vancouver Island and the Gulf Islands are visible in the lower left side of the scene, with the plume of the Fraser River lightening the otherwise dark water of the Georgia Strait in the centre of the scene. The city of Vancouver is north of the Fraser Delta at the top right, with the characteristic shape of the Stanley Park Peninsula clearly visible.

These pictures would be ideal for supporting a ship operation by showing the overall form of the river's plume at a given time. From a ship it is impossible to see the large-scale features of the silt distribution, so that it is difficult to relate current drogue measurements or STD casts to the general form of the plume. Unfortunately, these pictures suffer the very strong disadvantage of being available only every 18 days and then only if the weather is completely clear. The combination of these two limits results in there being only about three or four pictures of the quality of these examples per year for this area, whereas the requirement to support a ship study of the area is for several pictures per tidal cycle on the specific days when the ships are working.

Standard aerial photography requires many photographs to cover the area even when taken with a wide angle camera from high altitudes, and good weather is again necessary. Figure 2 shows a picture taken at 31,000 ft over the mouth of the Fraser River south of Vancouver, with a focal length of 88.5 mm or roughly 3.5 inches. The original picture is imaged onto a piece of film 9 inches square, which, for this short focal length, implies that the scene is being photographed out to about 60° away from the nadir with only very small geometrical distortions. This is the so-called "super wide angle" lens, the widest angle available for mapping purposes which, from 31,500 ft means that the photograph covers a little over 13 miles square.

To map the plume using this high altitude photography, however, still requires cloud-free weather and is also an expensive operation. Figure 2 was taken by the Canada Centre for Remote Sensing using a Falcon Fanjet aircraft. To provide coverage of about 80% of the plume area required about 20 photographs taken over a total of 70 line miles. The Centre charged $14 per line mile in 1975 and estimated that this recovered about 50% of their costs, so that the full cost of a single mosaic of the plume area would be around $2,000.

To reduce the dependence on clear weather, we experimented with taking pictures from a lower altitude using a fisheye lens in a 35 mm camera. The lens receives light from an angle of 220°, that is, up to 20° above the horizon in all directions when the camera is pointed vertically downwards. Figure 3 shows such a picture taken from a light aircraft over the First Narrows at the entrance to Vancouver Harbour. Stanley Park is visible to the left, connected by the Lions Gate (First Narrows) Bridge to the North Shore with its mountains foreshortened on the skyline to the right.

Pictures of the Fraser River plume were taken from a light aircraft at altitudes that varied between 500 and 4,000 ft during the ship operation. In fact, only one day was sufficiently cloud-free for high altitude photography to have been possible. The lens was mounted on a 35 mm camera with motorized

film drive, and pictures from a second camera having a conventional wide angle lens were taken at the same time. The fisheye lens allows the widest possible view to be recorded of the water and has the additional advantage that, since the horizon can be seen, the position of the aircraft can be deduced at any time from the angular spacings of landmarks. Similarly, any aircraft pitch or roll can be detected and their effects estimated.

Figures 4(a), (b) and (c) show a sequence of fisheye pictures of the edge of the plume. The aircraft positions deduced from the photographs locates this edge geographically and the main plume area can be mapped in outline from a flight that follows this edge across the Gulf of Georgia. The wide angle pictures (Figure 4(d)) record features of this edge with considerably more detail, and here show internal wave patterns in a cusp of silty water south of Bowen Island. Accuracy of the positions deduced in this way depends strongly on the distribution of suitable landmarks. At flying heights above 1000 ft, the aircraft's position could be deduced to better than 0.5 nautical miles accuracy, corresponding to bearings measured to about 1° of landmarks up to 15 miles away. This accuracy was sufficient for outlining the plume and showing changes after a few hours interval.

The product is not nearly as simple to use as a mosaic of high level photographs would be, but the method does give usable pictures in marginal weather conditions, and since a light aircraft is used (in this case a Cessna 180 aircraft) it is relatively inexpensive.

Any of these methods of producing a picture of a river plume from the air will only be mapping the surface distribution of silty water and will not be showing the velocity or volume of fresh water or the rate at which this water mixes with the salt water beneath. STD casts from a ship can provide more information in a few points, and it is the combination of ship and aircraft measurements that is needed to give useful results. Problems still remain in relating the two types of data, however. We have found examples where the plume, strongly visible from the air, was too thin (less than 1 m) to show on a standard STD cast.

WATER MOVEMENT IN BURRARD INLET

The second example of a requirement for aerial work, connected with the previous one, is in the measurement of surface currents and the distribution and variation of currents over a particular area. Here, what is required is simultaneous current measurements at many locations. Current meters are expensive and near the surface are likely to be damaged or removed by ship traffic. Several studies have been carried out on the west coast using freely floating drogues of various types. The most recent work has used drogues that can be tracked by standard ship's radar. Each drogue has a radar reflector and a sail at some selected depth in the water and is set out and retrieved during the study by one or more launches. The radar is mounted on as steady a platform as is available, ideally on land, and photographs of the radar display show the drogues' movement day and night in all weather except heavy rain.

This method has been very successful, and movies derived from the consecutive radar screen displays provide an impressive and quantitative picture of surface water movements. The radar reflector will, however, cause the

drogue to be affected by the wind and it is also difficult to design a drogue that will respond to the movement of the top surface layer of the sea less than 1 m deep. There is, therefore, still a use for aerial photography of floating sheet targets and water colour boundaries, especially in studies designed to duplicate the motion of oil slicks.

In a study of water movement in Burrard Inlet that took place in June of this year, a combination of current meters and radar-tracked drogues were used to monitor currents in the Inlet while a current meter array was used to measure the deep water flows across the entrance to the Inlet. Figure 5(a) shows an aerial photo (original in colour) that was taken during this study. Silty water from the Fraser is visible in the lower left and water entering from the east through First Narrows (top right) is faintly visible as it moves into an anti-clockwise eddy in English Bay. Figure 5(b) was taken eight hours later during the following flood. From single pictures such as these, one cannot make unambiguous current estimates, but the instantaneous picture of water colour variations in the Inlet shows the full distribution of Fraser River water at this time and can act as a check on the *in situ* measurements as well as a way of interpolating spatially between them.

Another source of data available from the same flight is imagery from a thermal scanner. This device senses temperature variations of the land or sea surface and converts them into a black and white image. Apparent land temperatures in summer sunlight generally fall between 10 and 40°C and a scanner is therefore set to receive this range of temperatures in studies of land targets. Water temperatures, especially in well mixed areas, cover a much smaller range, and in the images shown in Figure 6(a) and Figure 6(b) temperatures from 8 to 12°C are converted by the scanner to the full black and white range of the picture so that temperature changes of less than 0.25°C can be distinguished. Figures 6(a) and 6(b) were taken at the same time as Figures 5(a) and 5(b) respectively. In Figure 6(a) colder water can be seen moving out to the west through First Narrows as the tide ebbs. In Figure 6(b) the incoming tide pushes a jet of warmer water through First Narrows into Vancouver Harbour.

In Figures 7(a) and 7(b), the grey scale of the picture has been quantized electronically in steps corresponding to 0.67 and 1.0°C respectively. The apparent temperatures corresponding to each step can be deduced from thermal references built in to the scanner.

The apparent temperatures of the water, as measured by the scanner, will be affected by atmospheric absorption, which causes a change of several degrees for observations from high altitude. For these flights, water surface temperatures, measured at a variety of locations, showed that airborne temperature measurements deduced from Figures 7(a) and 7(b) were 3.5 and 2.5°C too cold, respectively. More detailed comparisons show that the difference is equivalent to approximately 30% absorption of the radiation in an atmosphere (or, more correctly, water vapour in the atmosphere) having a temperature of about 3°C.

The thermal radiation that is being measured by the scanner originates in a very thin (less than 1 mm) surface layer of the water which can sometimes differ in temperature from the bulk of the water beneath. Simultaneous low level radiation measurements on the second flight show that, in Figure 7(b) at

least, this effect is small.

Quite apart from the indications the figures give of the water circulation patterns, the distribution of surface water temperatures is plainly visible.

I must thank the Coast Guard, Ministry of Transport and Greater Vancouver Sewage and Drainage District authorities, who supplied water surface temperature measurements to me for the times of these flights.

The colour and temperature patterns shown in Figures 5, 6 and 7 vary during a tidal cycle and in response to other influences such as wind and fresh water runoff, and it would be useful to repeat aerial imagery at regular intervals to show these changes. To follow tidal variations, the repeat time would need to be one or two hours, and in fact photography was taken on two good days during the Burrard Inlet Study at two hour intervals during daylight using the light aircraft with the same fisheye/wide-angle 35 mm camera combination as described previously.

The ideal platform for studying this type of variation would be one that hovered at a point from which the entire scene is visible. A high resolution sensor in a geostationary satellite would view Canadian waters at an oblique, but, for southern Canada, acceptable angle and may one day be available. A satellite in an eccentric orbit could also give continuous daytime coverage of Canada.

In the meantime, cheaper alternatives have to be used. For Burrard Inlet, the mountains to the north provide a viewpoint from which this area can be seen at a glancing angle of from 5 to 15°. As part of the current study, a small Super 8 mm movie camera was fixed on a tree at 2100 ft altitude, recording the orientations of the ships at anchor in the Inlet at 5 minute intervals. The resulting movie provides an indication of current directions in the area where the ships themselves block radar returns from the drifting targets described earlier. Since the pictures are taken from a fixed location, they are simple to analyze. The small-scale film size (8 mm) gives considerably less detail than the 35 mm picture shown in Figure 8, but is still sufficient to show ship orientations to ± 20°. On windy days, of course, the ships will be pushed out of line with the currents since they are empty and riding high in the water. Air photos taken on past occasions, when a dock strike has increased the number of anchored ships to 15 or 20, have shown up the single and multiple gyre patterns which occur in this area.

UPWELLING OF MINE TAILINGS IN RUPERT INLET

The final example of air photo application concerns Rupert Inlet at the north end of Vancouver Island, where a copper mine has been discharging tailings into the water. The tailings are mixed with bottom water from the Inlet so that they should stay deep, and the long-term plan has been to fill the Inlet about one-third full of tailings without affecting its present surface water or shoreline. Unfortunately, the Inlet is joined to the sea by Quatsino Narrows, which has tidal currents up to 7 knots that stir the water in Rupert Inlet sufficiently to bring these tailings to the surface. The stirring only occurs on the incoming tide and depth of water affected depends

strongly on the salinities and temperatures of the water inside and outside the Inlet, which vary greatly during the year and with the shorter term weather.

Air photographs and sightings by a number of agencies have suggested in the past that the upwelling of tailings is getting worse as the mining operation proceeds (Figure 9). It is now in its fourth year out of an expected total of 20 years. Because of the variability in the amount of tailings being brought to the surface, it has been difficult to follow the increase or to say in what areas of the Inlet the problem will be worst.

To try to answer these questions, series of pictures have been taken from two different photo platforms. In one case, a camera was attached to a tree at the top of a nearby hill and set to take pictures once every 10 minutes. The camera was again Super 8 mm with automatic exposure control, and with this setting could continue to run for about 3 1/2 weeks. Unfortunately, the hills surrounding Rupert Inlet are low and provide a very shallow look angle at which only the strongest water colour changes in bright sunlight are visible.

A very useful viewpoint for this study was, however, obtained from a balloon (Figures 9(a) and (b)). The balloon is about 30 feet long and 15 ft in diameter, and when filled with helium provides about 60 lbs of lift. The balloon had been used in making atmospheric measurements by Dr. Miyake's group at the University of British Columbia and they were contracted to provide a series of 35 mm air photos over the Inlet. The balloon was inflated at the copper mine with the cooperation of mining company officials (Figure 9(a)) and was then flown above a launch using 4000 ft of 600 lb line on a motor-driven winch. Written permission was obtained from the Ministry of Transport to fly the balloon in daylight hours, below, but not in, cloud, on days when visibility was over 3 miles. The line was marked with 3 ft square red flags at intervals of 100 ft and pilots were warned of the operation through the standard "notice to airmen" procedure of the M.O.T.

A fisheye lens was used on the camera so that even at low altitudes down to 200 ft the entire affected area, about a mile across, could be seen and the position and orientation of the camera could be deduced from landmarks. This turned out to be extremely useful, since clouds often restricted the balloon's height and the movement of the balloon and camera caused by the wind would have made the pictures impossible to orient without landmarks being visible on the pictures. Series of colour photographs were taken on four separate days with the camera being triggered by a small attached intervalometer. These showed the upwelling very clearly. The balloon, launch and camera could be operated by two people. The balloon remained in flight at all times and could be pulled by the launch at full speed onto and off station. Its streamlined shape allowed it to stay near vertical in most wind or slipstream conditions, though drag on the line pulled this well away from vertical. On the highest flight with about 1200 ft of line out so that the lower end of the line was under reduced tension, the line was paying out horizontally. Optimum height for photographing the required area was 600 to 800 ft.

The balloon was pulled down to near the launch to service the camera and was left overnight held down by about 50 ft of line anchored on shore. It was this mooring arrangement that resulted in eventual disaster during a storm,

when it was blown to the ground and ripped.

The photographs obtained, however, showed that a balloon can be extremely appropriate for a variety of coastal studies when a continuous sequence of pictures from low altitude is required. Figures 11(a), (b) and (c) show part of one sequence in which the surface plume can be seen extending from Quatsino Narrows (lower left) almost to Hankin Point (top). The line tethering the balloon cuts across the right half of the picture.

CONCLUSIONS

The above examples of aerial photography show some, but by no means all, of the variety of techniques that can be applied to coastal oceanography. The results are in many cases qualitative and are sometimes not easy to integrate with measurements based on conventional *in situ* techniques. However, an image that shows an entire view of an area under study, where some property of the water has been made visible, is so obviously useful that some attempt at remote sensing type measurements should always be considered. The equipment does not have to be sophisticated to give worth while results.

I would like to thank fellow workers at the Institute of Ocean Sciences, Patricia Bay for advice and discussions in planning these projects.

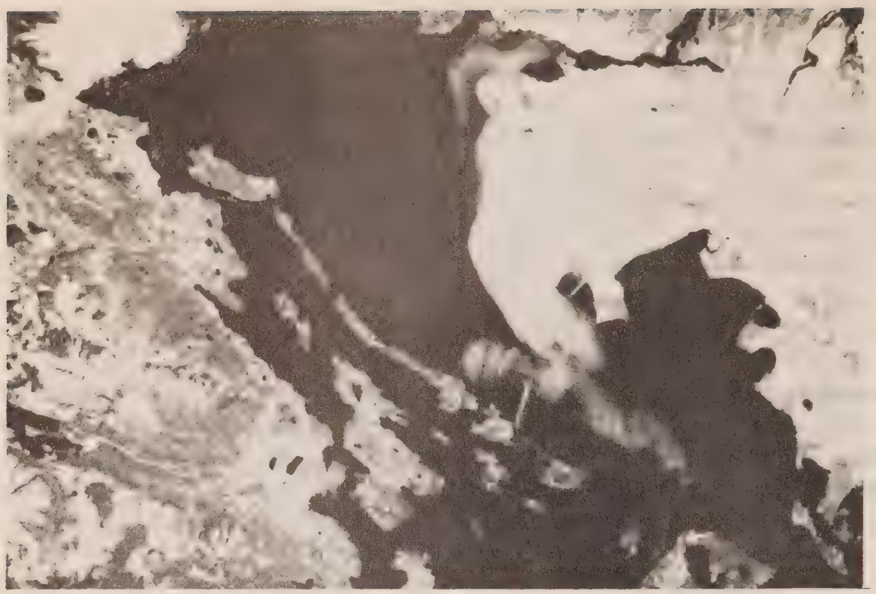

Figure 1a. Part of the LANDSAT-1 scene for July 30, 1972 showing (centre) the silty plume from the Fraser River against the dark, clearer, water of the Georgia Strait.

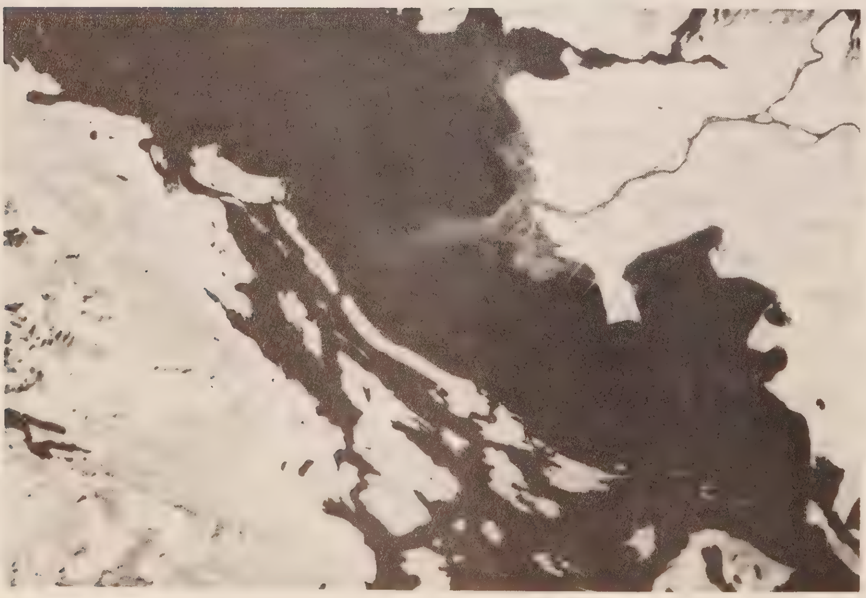

Figure 1b. A similar scene for September 4, 1972.

Figure 2.

A high level air photograph of the mouth of the Fraser River south of Vancouver, taken from 31,500 ft. with a super wide angle lens.

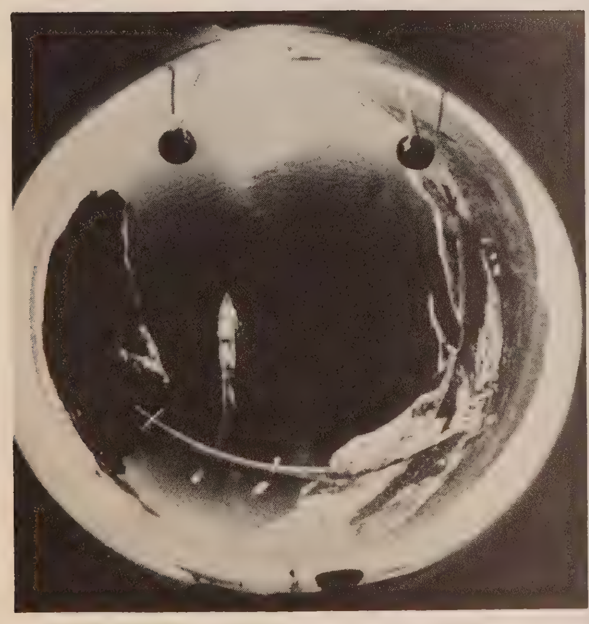

Figure 3.

A photograph taken through a fisheye lens at 1000 ft. over First Narrows, Vancouver.

Figures 4a,b,c

A series of fisheye photographs taken from a light aircraft flying over an edge of the Fraser River plume on June 4, 1974.

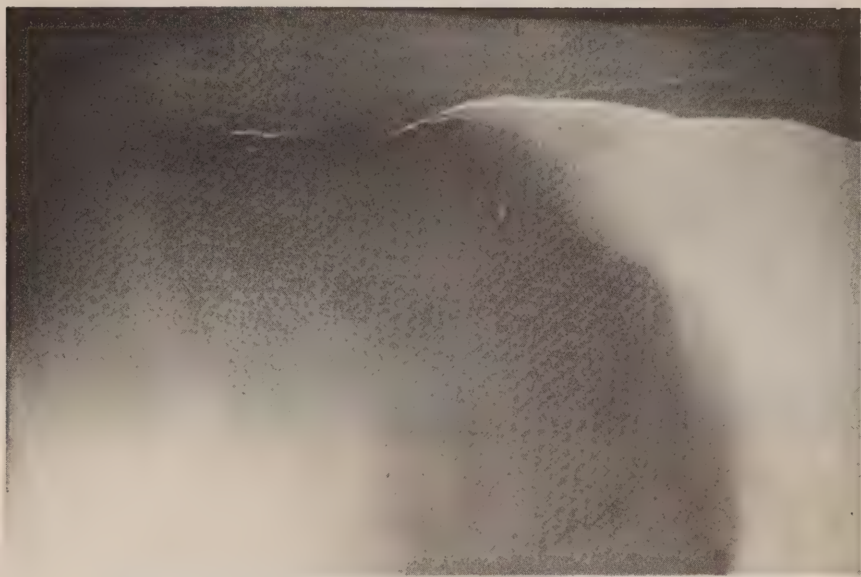

Figure 4d. The wide angle photograph taken at the same time as Figure 4c and showing the cusp of silty water with higher resolution and without the geometrical distortions of the fisheye lens.

Figure 5a

Figure 5b

High level air photographs showing Burrard Inlet and Vancouver at 1100 and 1900 PDT on June 11, 1975, during an ebbing and a flooding tide respectively.

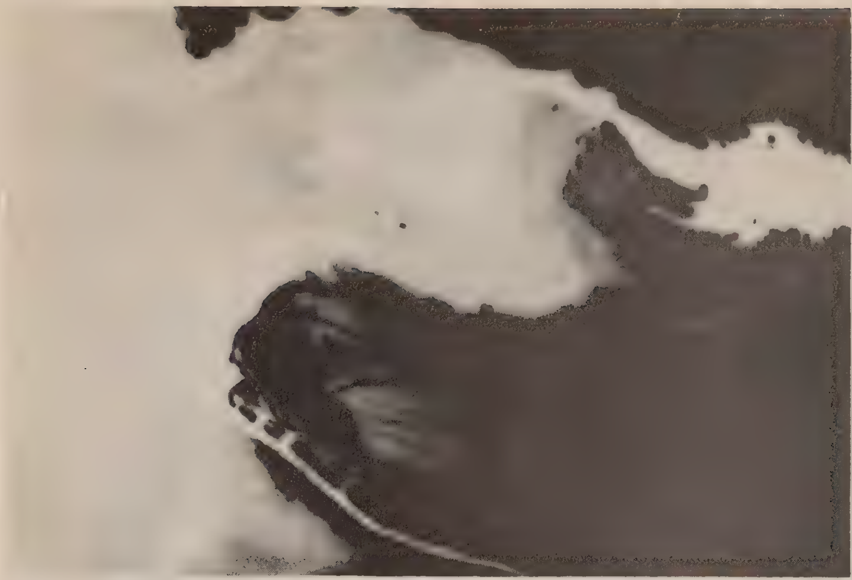

Figure 6a

Figure 6b

Thermal scanner imagery of the same area as Figure 5a and 5b taken at the same times. Warmer areas (15°C) are black and colder areas (11°C), white. In Figure 5a the tide is ebbing, and in Figure 5b the flooding tide sends a jet of water into the colder Vancouver harbour.

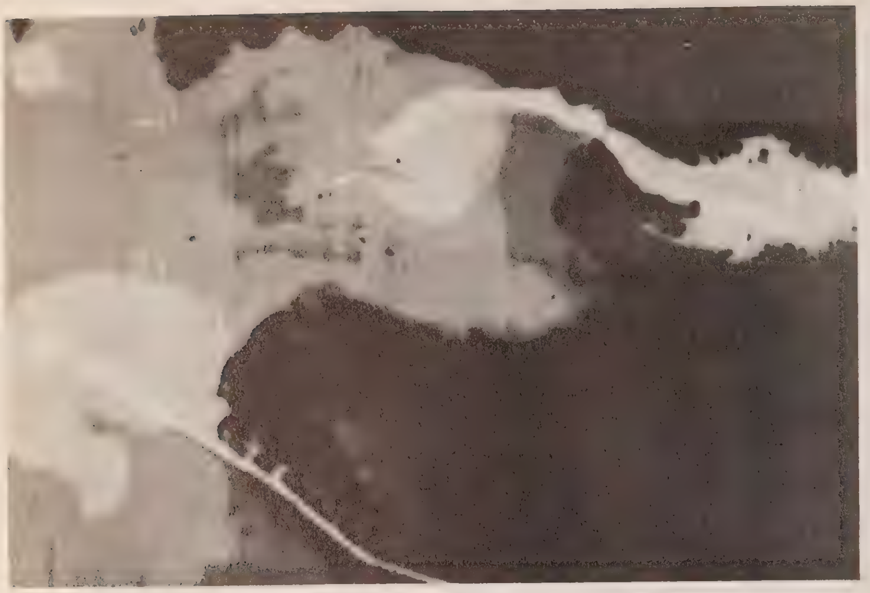

Figure 7a

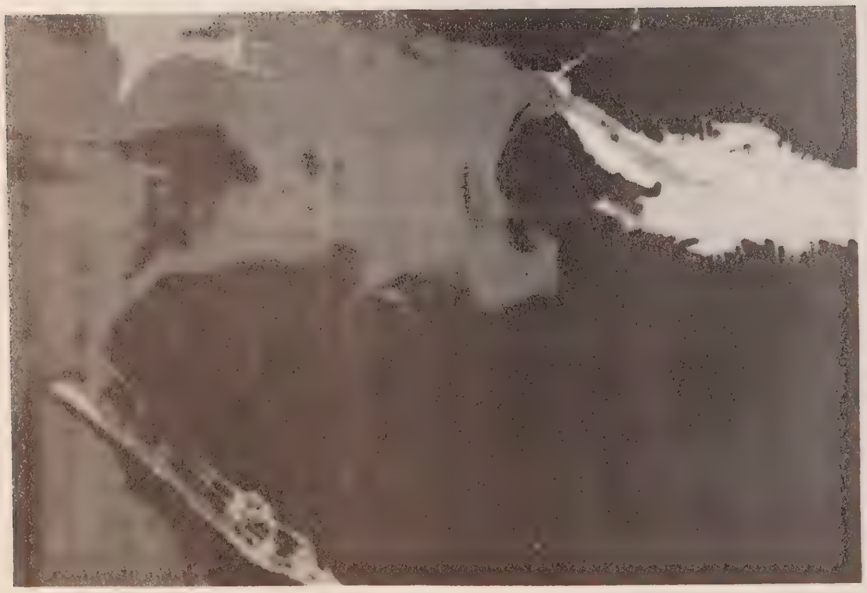

Figure 7b

The thermal scanner imagery of Figures 6a and b with the grey scales quantized at $0.6^{\circ}C$ intervals in Figure 7a and at $1.0^{\circ}C$ intervals in Figure 7b. The apparent temperatures corresponding to the different grey levels can be found from the known temperatures of the scanner's reference sources.

Figure 8. Ships moored in Burrard Inlet with their orientations indicating the incoming tidal current. Aerial photographs on past occasions have shown the presence of complex gyres in this area.

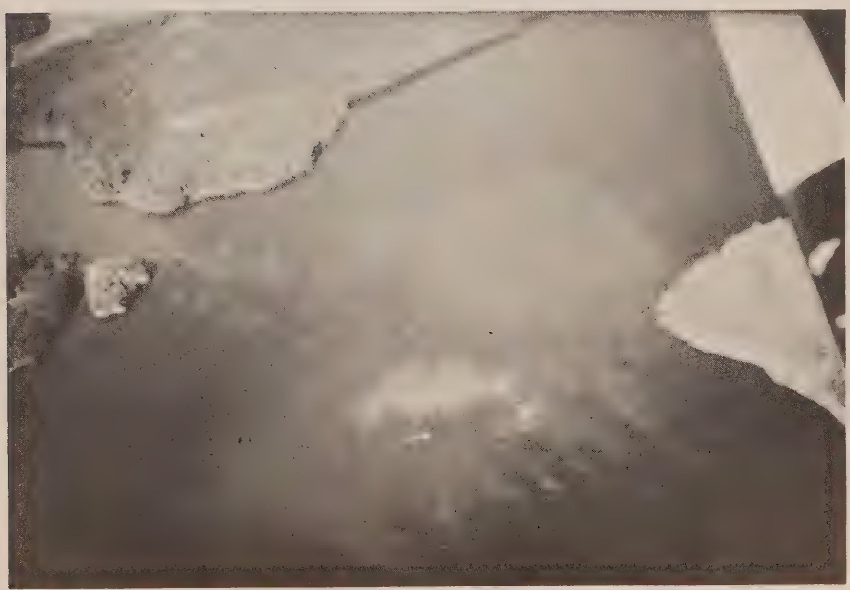

Figure 9. An oblique air photograph from 1500 ft. showing upwelling of mine tailings opposite Quatsino Narrows in Rupert Inlet.

Figure 10a. The balloon during inflation on the shore of Rupert Inlet.

Figure 10b. The balloon flying overhead at 600 ft. altitude with the camera package (the small black rectangle) hanging underneath.

Figure 11a,b,c

A series of 3 photographs of the upwelling mine tailings in Rupert Inlet taken with a fisheye lens from the balloon at a height of 600 ft. These are part of a longer sequence taken at 10 minute intervals and covering most of the period of incoming tide.

Pacific Marine Science Report 75-9

ISOTHERM PLOTS OF BABINE LAKE DURING THE ICE FREE SEASON

by

D.M. Farmer and L.A.F. Spearing

INSTITUTE OF OCEAN SCIENCES, PATRICIA BAY
Victoria, B.C.

For additional copies or further information, please write to:

Environment Canada

Institute of Ocean Sciences, Patricia Bay

512 - 1230 Government Street

Victoria, B.C.

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ABSTRACT

This report presents isotherm plots derived from two years of temperature profile observations in Babine Lake. The temperature profiles were obtained from a small launch using a bathythermograph. During most of the ice-free seasons of 1972 and 1973 temperature sections and secchi disc observations along the full length of the lake were taken twice a week. Other measurements reported here include observations in Morrison Arm and also a set of transverse sections at various points along the lake. The isotherm plots display a number of interesting features, including the effect of spring convection, wind induced upwelling, the nature of the autumn cooling and also the relationship between transparency and distortions of the thermocline.

ACKNOWLEDGEMENTS

Nearly all members of the Coastal Oceanography Section took part in this project at one time or another. The Fisheries Research Board made available to us the excellent facilities at Halifax Camp as well as launches and outboard motors; we are particularly grateful to the camp manager, Mr. Joe Martell, for his help in many aspects of the programme. We are also indebted to the camp managers of the Fisheries Service stations at Pinkut Creek and Topley Landing for making their facilities available, and to the many other individuals whose friendly assistance contributed significantly to the success of this project.

This report summarises the results of a series of temperature observations taken in Babine Lake during the ice-free periods of 1972 and 1973. These measurements were taken as part of a larger limnological programme designed to examine various aspects of the lake's productivity and the likely impact of local mining, logging and related activities.

A large number of temperature measurements have been previously collected in Babine Lake, often in conjunction with biological or chemical sampling. Johnson (1965b) has presented data obtained over the period 1956-1963; McDonald and Scarsbrook (1969) and Narver (1969) have reported more recent observations. Johnson (1965a) has provided a thorough review of the morphometry of Babine Lake along with calculations of volumes, shore lengths and related parameters. More recently, the Inland Waters Branch of Environment Canada has published a detailed chart of the lake, developed in the course of a sediment survey.

Babine is a large lake and the problems to be tackled are broad. It is still too early to judge the success of this project in meeting the longer range objectives. However, it is already clear that the intense observational programme as well as some of the initial data analysis have greatly improved our understanding of the lake, and a number of unexpected phenomena have become evident that have application beyond the immediate aspects of salmon enhancement in Babine.

The physical programme consisted of a series of bathythermograph soundings along the lake, together with a number of recording thermistor chain observations, current measurements and meteorological observations. Moreover, the programme continued through the winter months, though on a much reduced scale.

The objectives of the physical limnology programme were:

(i) to gather a background record of the lake's thermal structure during the period of intense biological study and

(ii) to examine a few important physical processes that seemed relevant to the overall biological problem.

Our plan was to make available to biologists in the field a "running commentary" of the main features of thermal structure. In this way we hoped to provide a level of support that would assist the biological programme in the field, with the possibility that research plans could be modified at short notice to take advantage of changes in the physical environment.

This would hardly have been possible in a lake that was both wide and long. However, the fact that most of Babine Lake is quite narrow encouraged us to provide a thermal description that was basically two-dimensional. In practice, it has turned out that this is adequate during most of the summer, but that significant transverse gradients can occur in spring and autumn.

The running commentary made available on a week-by-week basis during the summer field operations consisted of sets of isotherm diagrams derived from the temperature soundings and it is these isotherm plots, together with secchi disc observations, which form the basis of this report. Only the iso-

therm plots themselves are reported here, since the individual temperature readings would occupy a great deal of space. The individual readings are available on magnetic tape, however, and can be obtained from the Coastal Zone Oceanography Section of Environment Canada, Ocean and Aquatic Sciences, Pacific Region.

Figure 1 shows the location of the bathythermograph (B-T) stations. The observations began with a mechanical bathythermograph, but in 1973 an electronic B-T was used. This instrument, constructed by the electronics group of the Canadian Hydrographic Service, employed a fast response thermistor, pressure sensor and bridge circuit to drive an X-Y recorder located on board a launch. Reversing thermometer measurements taken in the deeper water at Station 60 provided a check on the profiling device as well as a more accurate time series of seasonal deep water temperatures. The accuracy of the mechanical B-T is expected to be approximately ± 0.2°C. The electronic profiler has an accuracy limited mainly by the non-linearity of bridge response; over the full range of 0-25°C, the error was of order ± 0.1°C, although greater accuracy was possible with a reduced range in use during the autumn and winter (Personal Communication, T. Curran).

Two runs along the length of the lake were carried out each week, with remaining days spent taking transverse temperature sections, measurements in Morrison and Hagan Arms and also maintenance of equipment. Weekly transverse temperature sections were taken at Port Arthur, Black Point, Bell and Topley Landing; the Boling Point transect was carried out every two weeks. Times were recorded in Greenwich Mean Time and thus some of the runs straddled two dates, although in local time they were completed within a single day. This is invariably true of the main lake runs.

The results of each set of observations (B-T slides in 1972 and X-Y plots in 1973) were digitised at the base camp and isotherm plots similar to those presented here were compiled for use by biologists and others involved in the project. Solid lines have been drawn at 2°C intervals. Isotherms at smaller intervals are drawn with dashed lines where the stratification is less intense.

As with any set of isotherm plots of this type, there is a problem of aliasing both in space and time and this should be kept in mind when examining the results. Before discussing this aspect, however, it seems appropriate to indicate the motivation for choosing to collect and present the data in this way. In Johnson's (1965) scheme, time-series of temperature profiles are combined to form a contour plot for a particular station. These plots can provide a useful indication of the seasonal change at a particular location and it is a good method of presentation if related work precludes the possibility of obtaining profiles from many stations on the same day, but it cannot provide a dynamic picture of the whole lake at any given time. On the other hand, McDonald and Scarsbrook's (1969) presentation of isotherm plots, which is similar to that presented here, does provide a more complete picture of events in the lake, provided that it can be conducted swiftly and frequently enough to allow a reasonable time series to be generated.

It is this sequence of "snapshots", showing the essential features of the whole lake, that the data presented here is intended to provide. Since the thermal structure of a large lake is constantly changing, the data

required for such a snapshot must be taken over a short space of time. Although it is obviously impractical to take all of the profiles simultaneously, it is at least possible to move faster than the internal disturbances themselves, that is, to take successive profiles such that the average speed of the sampling vessel exceeds the propagation velocity of internal gravity waves. This criterion was met by traversing the full length of Babine Lake in a single day, in order to obtain data for the principal set of isotherm plots. This was not quick enough to *freeze* the isotherms, especially since significant weather changes can occur within a few hours, but it was fast enough to allow profiling of water whose thermal structure could not have been altered by events occurring within the previously sampled portion of the lake.

Spatial aliasing, due to internal wave energy whose wavelength is comparable to or less than the separation of sampling stations, is also present. It is not easy to be sure just how great is the aliasing due to spatial separation of profiles. On the basis of comparisons with data collected by recording thermistor chains, it seems likely that both the larger amplitude and also the more persistent features are relatively unaffected. However, higher wavenumber events are inevitably lost. For example, thermistor chain data show that the internal disturbance between Stations 60 and 64 of Run 202 (July 6, 1973) consists of a series of rapid vertical oscillations of the thermocline preceding the surge and these are lost on the isotherm plot. Nevertheless, the main effect of the surge itself, that is, the deepening of the thermocline between Stations 62 and 64, is preserved.

Although an important motivation for collecting these data was the desire to obtain real-time descriptions of thermal conditions for use by biologists working in the field, the observations also provide a useful background for studying certain dynamic processes from the physical point of view. In general, these processes are best studied in conjunction with anemometer and thermistor chain data and it is not the purpose of this report to discuss them in detail. However, this presentation does provide a first-look at the larger and more persistent features, some of which are listed below.

(1) *Spring Warm-Up*

The period of convection following ice break-up and the subsequent formation of thermal stratification were missed in 1972 but show up clearly in the 1973 data. Initially the observations are limited by ice which leaves the northern part of the lake last; Run 158 (May 24) was the last to record profiles likely to be associated with convection and by this time appreciable stratification had occurred in the North Arm.

The numerous vertical isotherms in the early 1973 plots simply indicate that convective warming was proceeding and had reached different stages in different locations. It is interesting to note that during Run 156 (Main Lake, May 13, 1973), convection had not yet penetrated to the lake bed. On the other hand, although convection continued on the subsequent (May 21) run, there was no longer any trace of winter stratification at depth. The destruction of winter stratification by spring warming has been discussed in detail in a separate paper (Farmer, 1975).

The Bell Transect of May 28 (Run 160) suggests the thermal bar effect

associated with spring warming, which has been observed in the Great Lakes. Although the finer structure cannot be seen with just five stations, it is evident that the shallower parts of the lake near the shore warm most rapidly, with convection continuing longest in the deeper parts of the lake. This emphasises a difficulty associated with the isotherm diagrams at this time of year. When the density stratification is very small we can expect appreciable transverse temperature gradients and these will to some extent limit the validity of the one-dimensional approach represented by the main lake isotherm plots. The case of transition through the temperature of maximum density (Run 160) is an extreme example, but the relatively weaker density gradients at lower temperatures permit much larger slopes to occur after strong winds (Port Arthur transect, Run 169).

It is interesting to note that the North Arm of the lake (Stations 10-17), although last to lose its ice cover, is also first to gain its thermocline. This is clearly a consequence of the much smaller amount of heat required to warm this shallow body of water through the 4°C transition. However, other effects, such as generally lower wind speeds and higher turbidity may be important after the temperature of maximum density has been reached.

(2) *Regions of Upwelling and Mixing; Internal Surges*

The type of isotherm plots presented here are particularly appropriate for displaying areas of persistent upwelling or other wind-induced phenomena. Horizontal divergence of the wind-stress induced by surrounding mountains can easily produce local areas of upwelling or downwelling. Even though the wind itself is time-dependent, over a long period a time-averaged wind-stress is bound to display horizontal inhomogeneity in a lake such as Babine. Hamblin (1975) has applied linear inviscid theory to explain some of the upwelling phenomena indicated in the Babine data. Lee (1975) has examined the problem of transverse upwelling in Babine, using a model that includes viscous effects. By scanning through two years of isotherm plots, we can see that there are at least two areas of persistent upwelling in Babine Lake. These include the region encompassing Stations 20-25 and the area of the southern basin encompassing Stations 56-62.

Striking examples of upwelling in the northern basin appear in Runs 7 and 8, although at least twenty isotherm diagrams made over the two years show clear evidence of upwelling, though of relatively smaller amplitude. Similarly in the southern basin, a major event is recorded in Runs 17 and 20, with appreciable upwelling on the latter. Noticeable upwelling in this area appears in at least sixteen isotherm plots.

These distortions of the thermocline may be repeated in the same area but they are dynamic events, often associated with the generation of internal waves. This is particularly true in the southern basin, in which internal surges are generated. The details of the surge generation in Babine Lake is the subject of a separate paper, but we note here that the bend in the lake at Boling Point will be responsible for horizontal divergence of that component of the wind-stress which is oriented along the lake axis. Thus, a westerly wind has a significant transverse component north of Station 62, but south of this the full force of the wind is directed along the lake axis. Strong westerlies cause a deepening of the thermocline near the south end, but an

upwelling in the area of divergence north of Boling Point. The entire disturbance then propagates northward before dissipating in the broad central region.

(3) *Fall Cooling*

Autumn cooling is associated with deepening of the thermocline due to penetrative convection accompanied by a reduction in the density difference across the thermocline as the temperature of the surface layer approaches that of the deeper water. It is interesting to note that these two effects have an opposing influence on the phase speed of internal waves, and consequently on the amplitude and slope of internal disturbances such as surges, generated by the wind. In Babine Lake the reduction in density difference across the interface tends to exceed the effect of thermocline deepening so that the phase speed progressively drops back to about 25 cm sec^{-1} by early October.

After sufficient weakening of the stratification a storm can produce major distortions of the thermocline such that it ceases to bear any resemblance to the summer stratification. This had evidently occurred by September 22 in 1972 and by October 16 in 1973.

A curious effect apparent in the subsequent isotherm plots is that the area around Stations 20-33, centered on Station 25, remains persistently warmer than the rest of the lake. Examination of the main lake isotherms for Runs 91 to 151 shows this effect particularly well. Even though the 1973 data collection was terminated earlier, the effect is also apparent here. The cause of this effect is not clear; although the possibility of transverse gradients mentioned earlier must be kept in mind, the isotherm plots for Port Arthur, Topley Landing and Bell tend to support the hypothesis that the distortion is independent of the distance from shore.

On the other hand, inverse thermal bar effects are apparent in the autumn data from Morrison Arm. The 1972 data are particularly clear in this respect; starting September 23 (Run 88) the isotherms recede from the head to the mouth as the shallower water cools more rapidly. By November 4 the water at the head of Morrison Arm has reached the temperature of maximum density and thereafter the 4°C isotherm itself retreats toward the main lake. Profiles close to the main lake show a temperature decreasing with depth; those beyond the 4°C isotherm show a temperature increasing with depth.

(4) *Relation Between Secchi Depth and Thermal Structure*

Although the depth at which a secchi disc is marginally visible constitutes a rather unsophisticated measurement, it is nevertheless a useful indicator of water transparency. Secchi depths have been plotted on the same horizontal axis as the main lake isotherms in order to facilitate comparison with the thermal structure.

By far the most transparent water was that encountered in the spring of 1973 when convection was still taking place. The maximum depth was 10 m, obtained at Station 56 on May 13, 1973. However, spring is also the time of maximum variability and on this same run a secchi depth of only 2.5 m was

found at Station 17.

The reason for this great variation is probably related to the stratification. By May 13, 1973, the north arm had already acquired a shallow thermocline whereas in most of the rest of the lake convection was proceeding almost to the lake bed. A shallow thermocline at this time of year would clearly be most favourable to algal growth and a phytoplankton bloom is certainly possible. A second factor is the turbid run-off that can occur in this area, which could leave a thin layer of less transparent water floating on the surface of the lake.

In both years the secchi depth tended to be somewhat less in the north arm until mid-June. At this time of year when the thermocline is shallow, transparency is fairly sensitive to upwelling. For example, Run 8 (June 30, 1972) shows a sharp increase in transparency at Station 20 which corresponds to a region of strong upwelling. On the other hand, the major upwelling occurring at Stations 56-62 in Run 20 (July 18, 1972) does not appear to be associated with appreciable transparency changes. Presumably it is necessary for the thermocline to rise to the surface before significant effects are seen, and this is most likely to occur in the spring, when the stratification is both weak and shallow.

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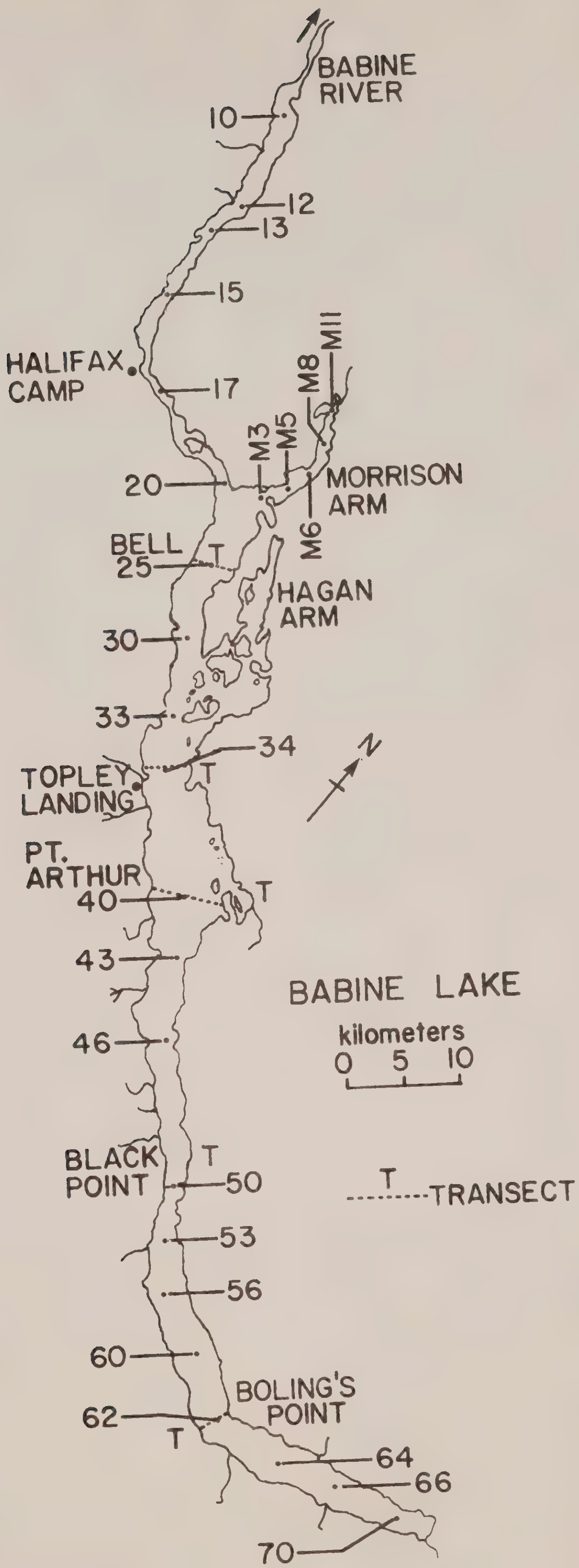
BABINE RIVER
10
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13
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HALIFAX CAMP
17
M3
M5
M8
M11
20
MORRISON ARM
M6
BELL
T
25
HAGAN ARM
30
33
34
T
TOPLEY LANDING
N
PT. ARTHUR
40
T
43
BABINE LAKE
kilometers
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BLACK POINT
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BOLING'S POINT
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64
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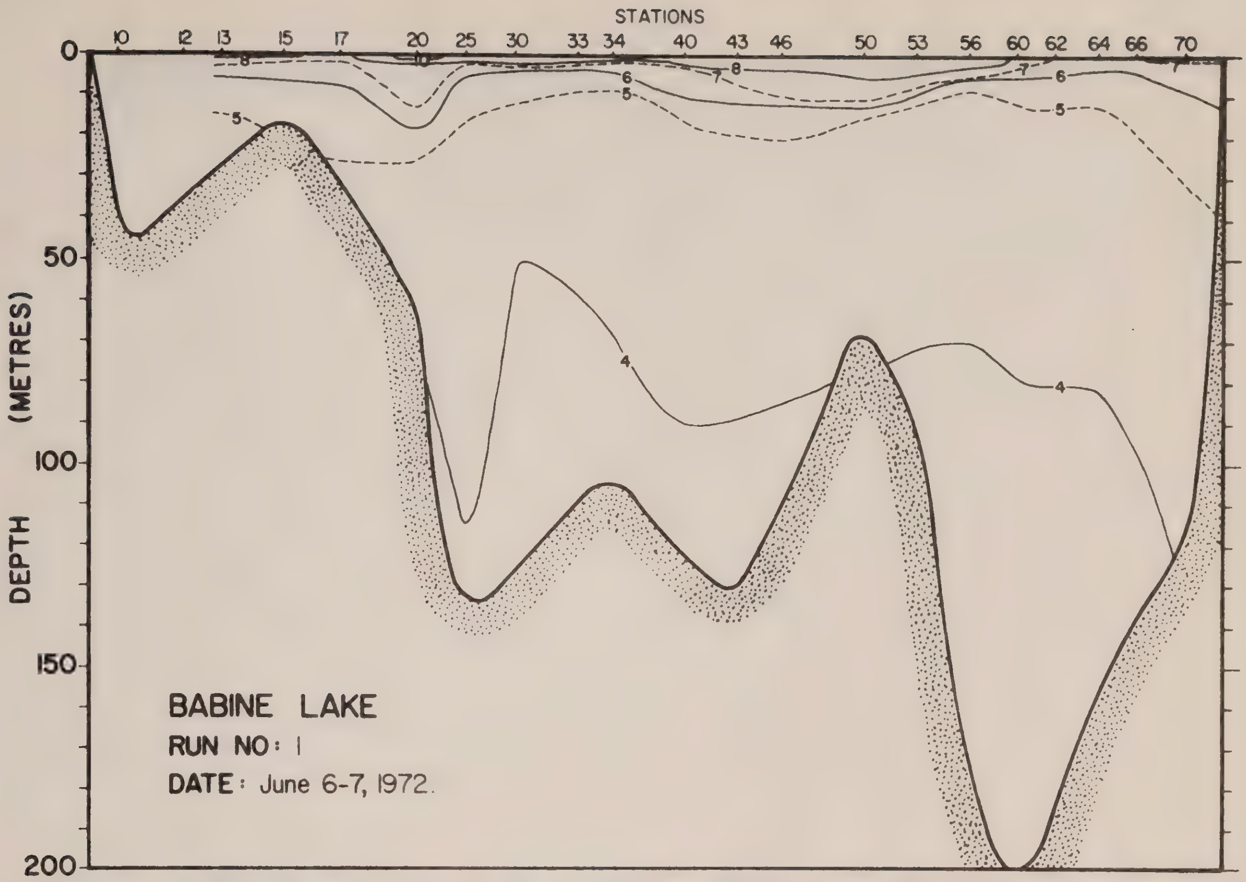
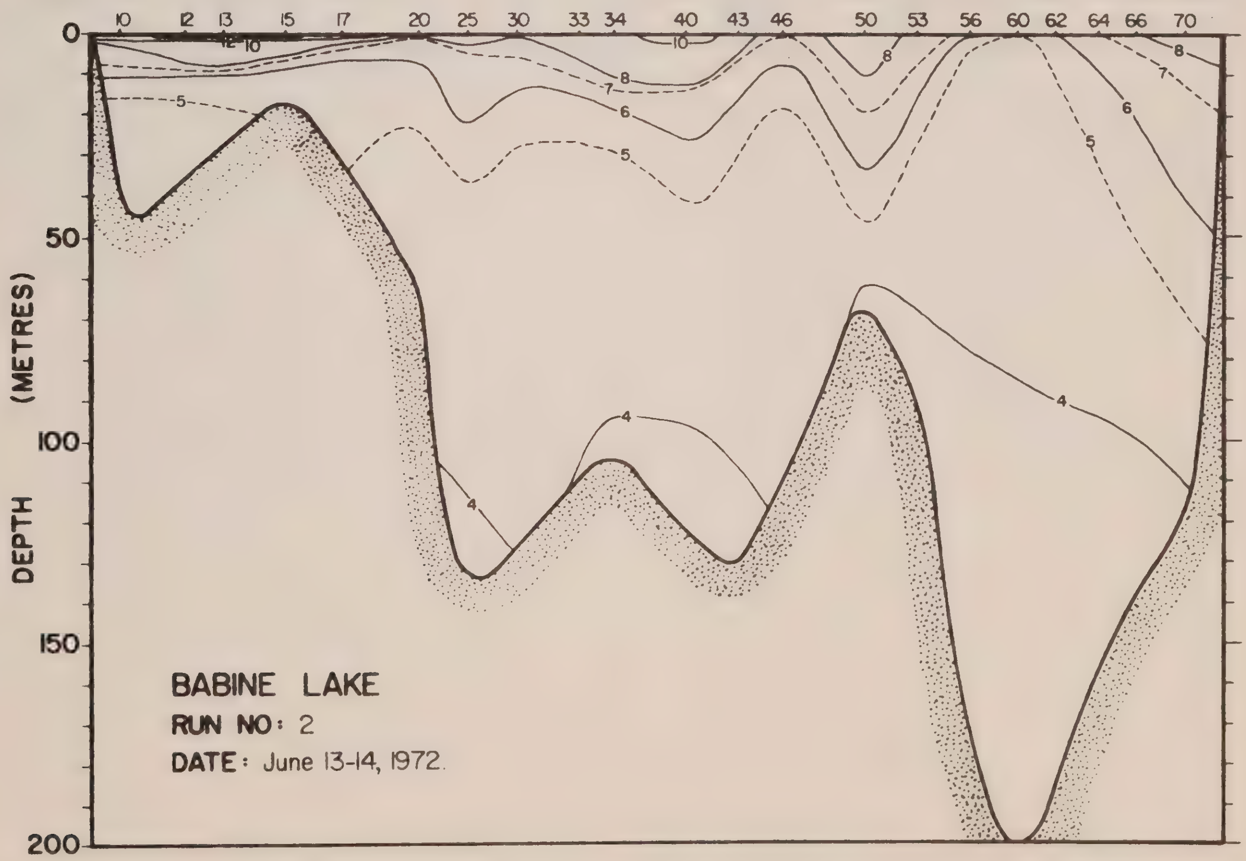
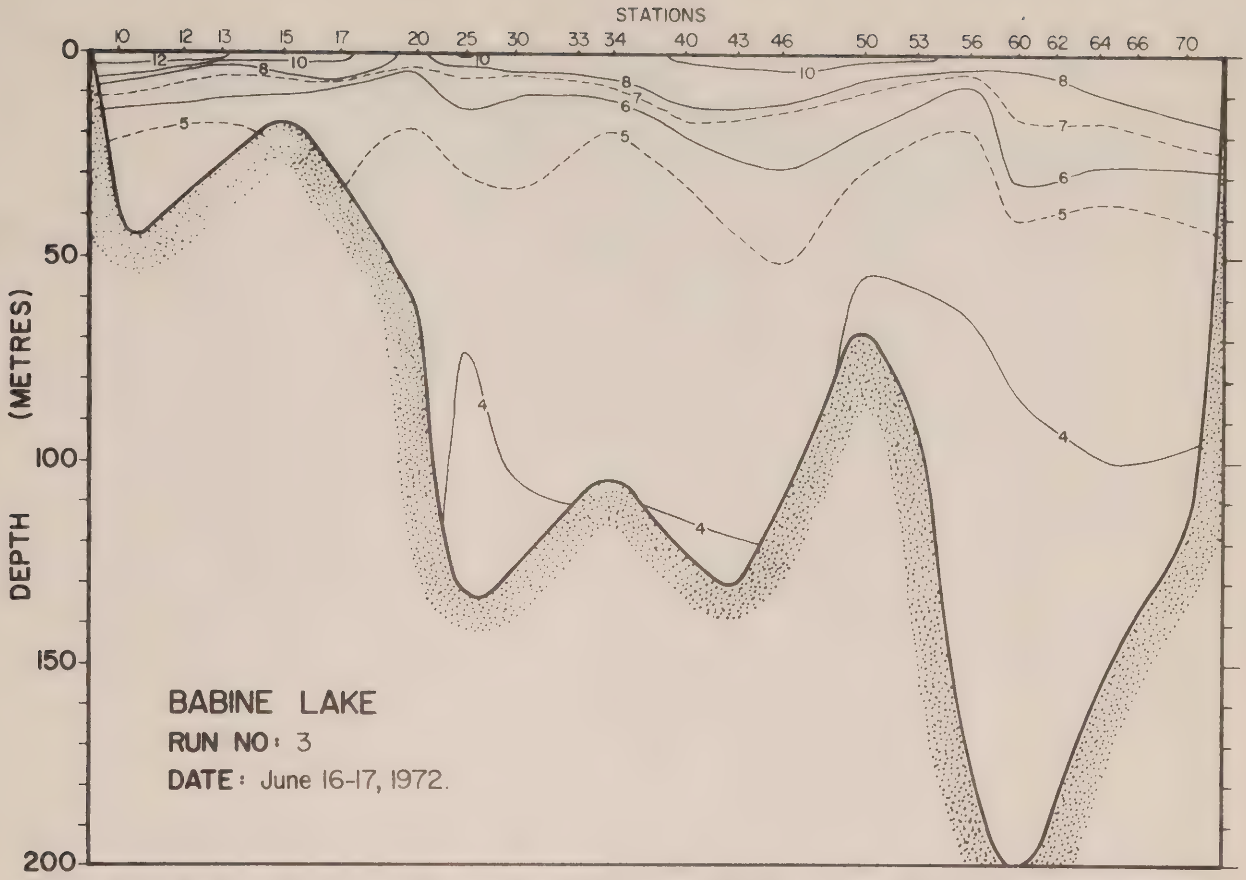
70

Figure 1

MAIN LAKE (JUNE 6 - NOVEMBER 24)


STATIONS
DEPTH (METRES)
BABINE LAKE
RUN NO: 1
DATE: June 6-7, 1972.


DEPTH (METRES)
BABINE LAKE
RUN NO: 2
DATE: June 13-14, 1972.


STATIONS
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DEPTH (METRES)
0
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200
12
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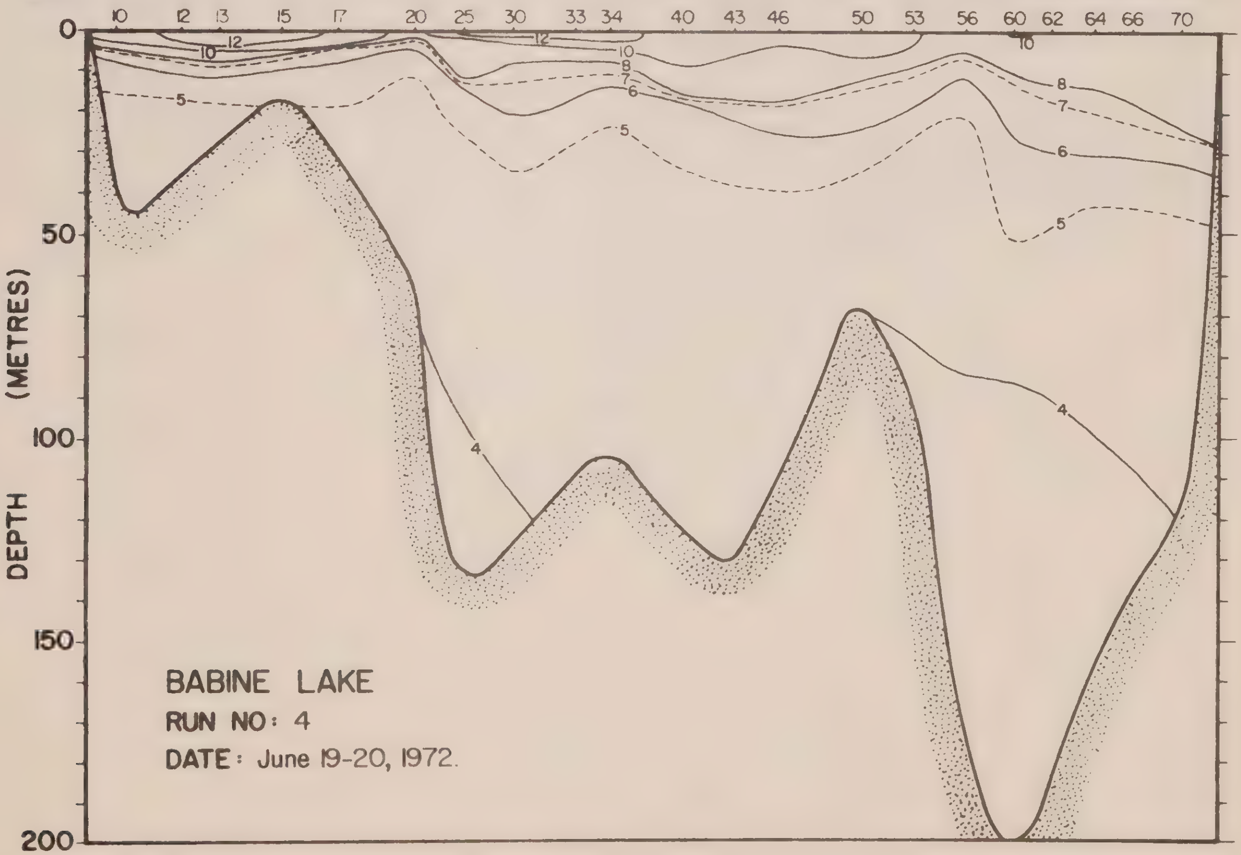
4
BABINE LAKE
RUN NO: 3
DATE: June 16-17, 1972.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DEPTH (METRES)
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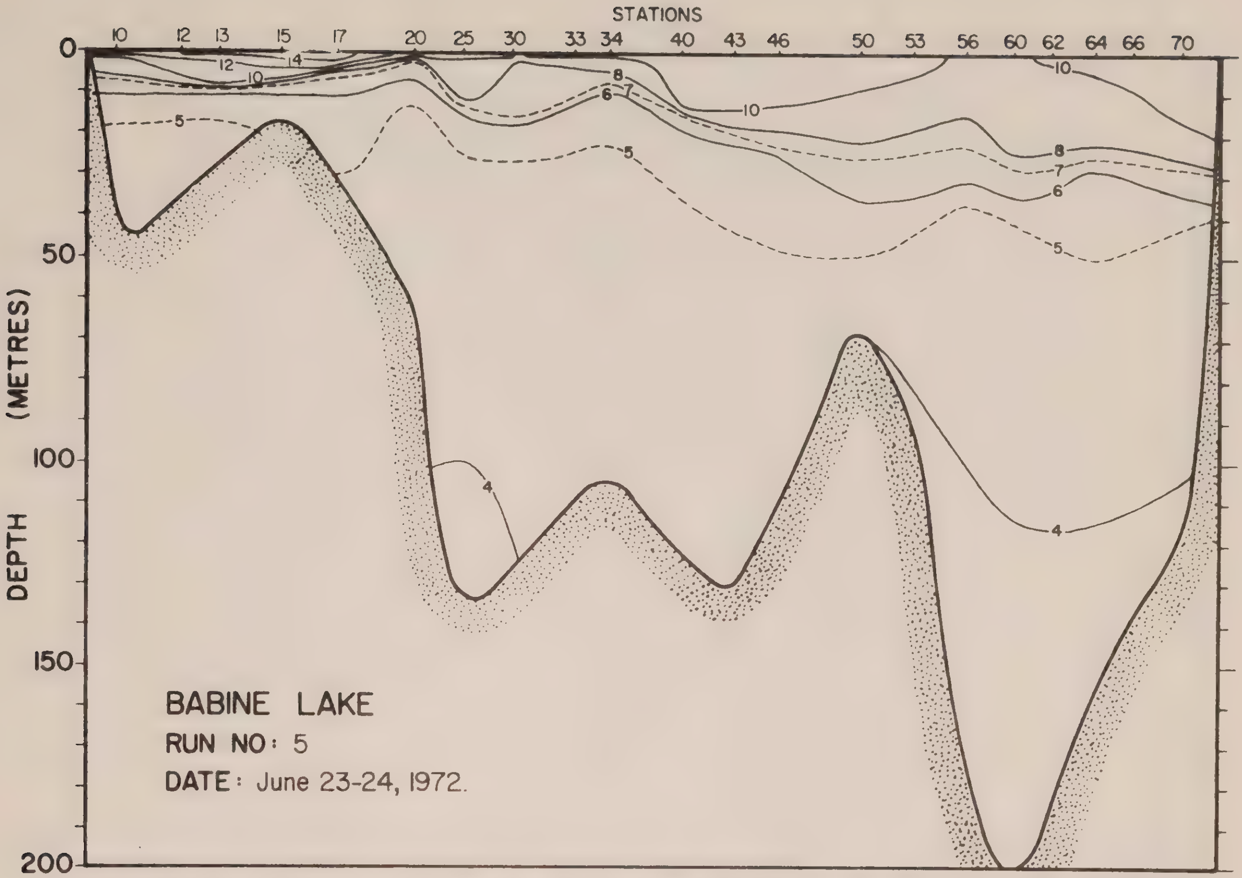
BABINE LAKE
RUN NO: 4
DATE: June 19-20, 1972.


STATIONS
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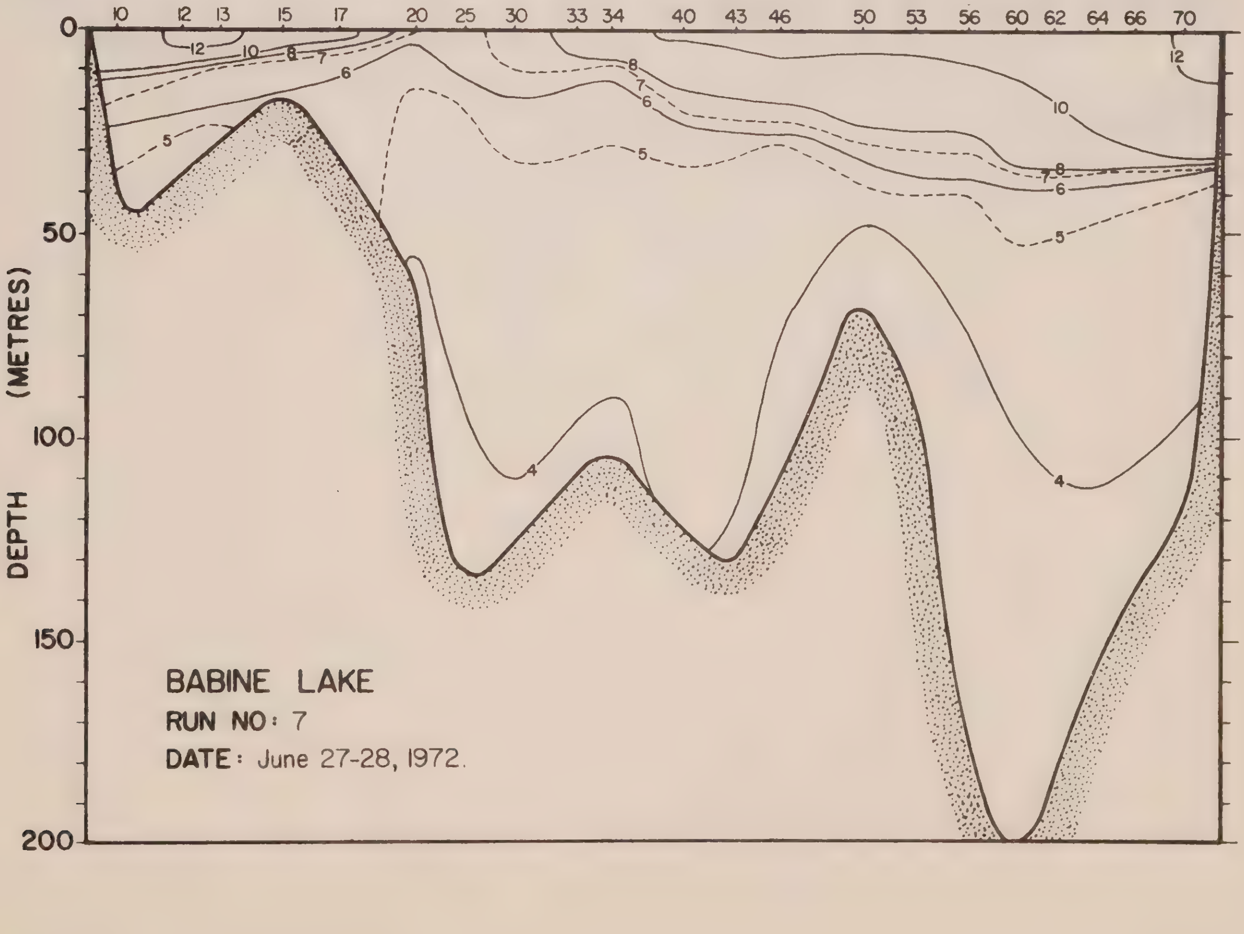
BABINE LAKE
RUN NO: 5
DATE: June 23-24, 1972.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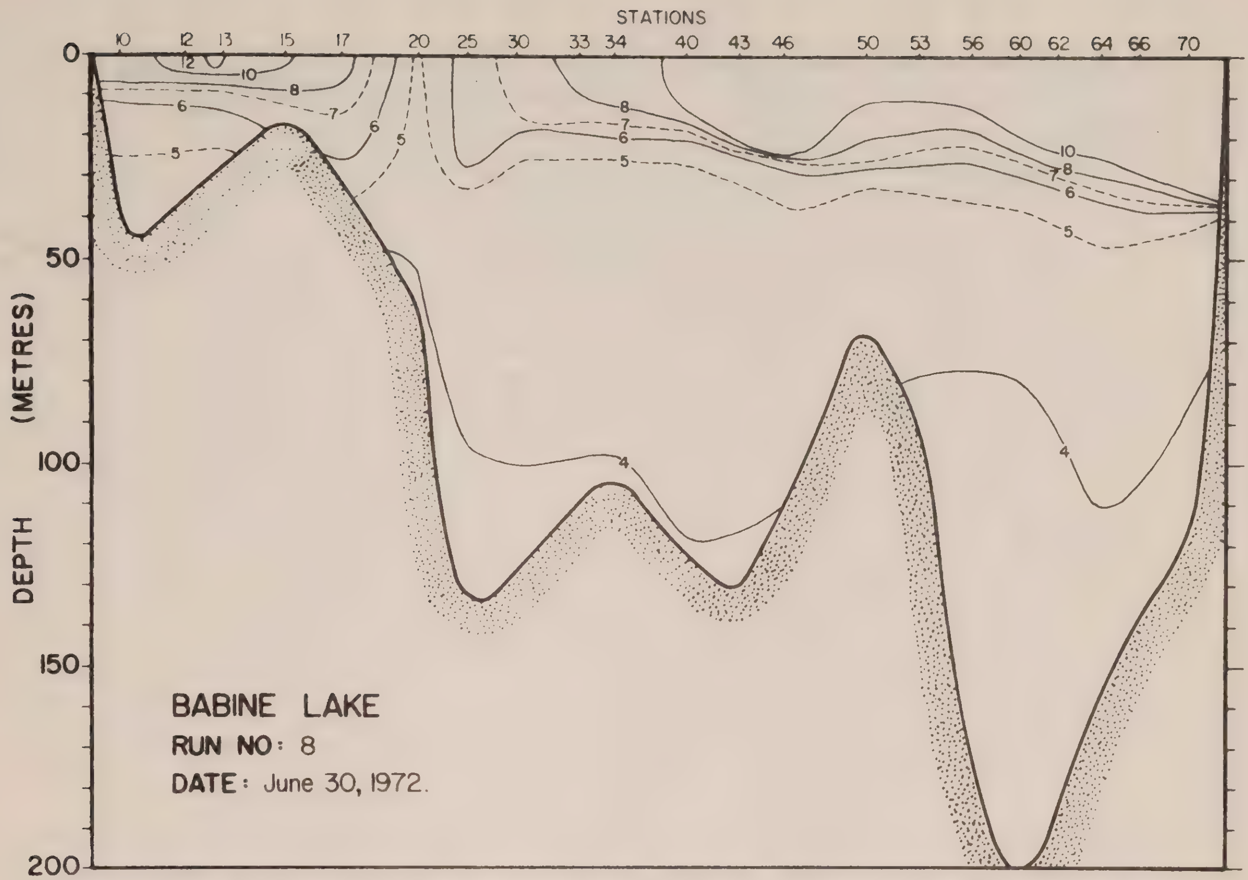
200
BABINE LAKE
RUN NO: 7
DATE: June 27-28, 1972.



STATIONS
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DEPTH (METRES)
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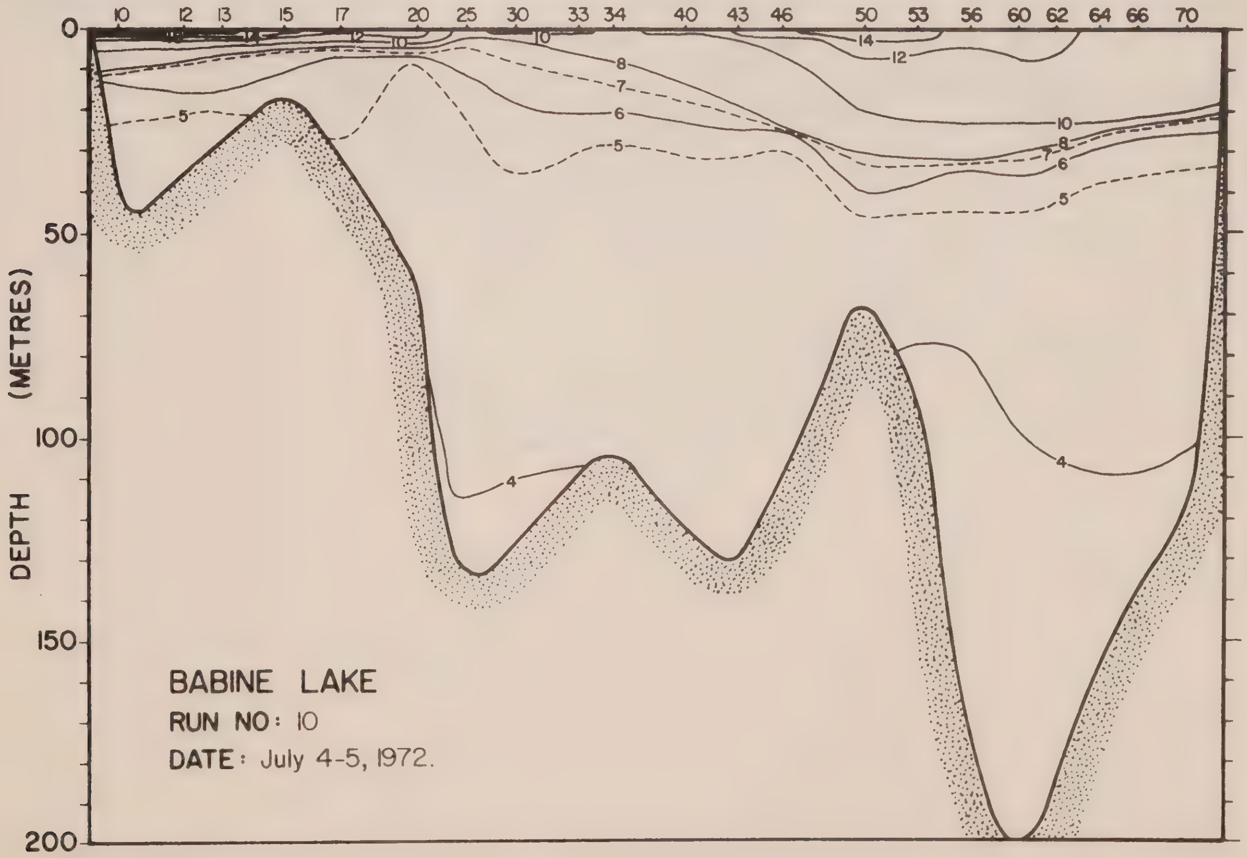
BABINE LAKE
RUN NO: 8
DATE: June 30, 1972.



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DEPTH (METRES)
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150
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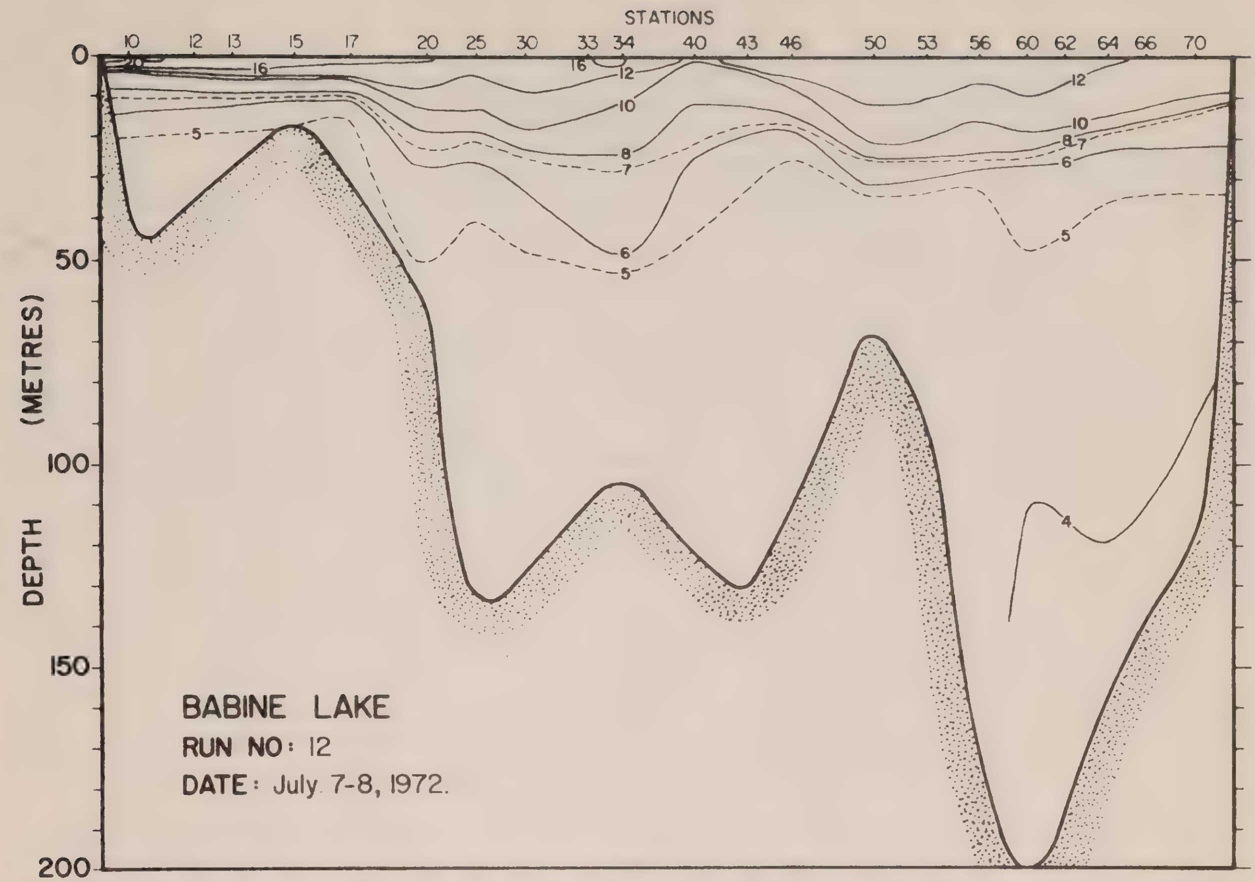
BABINE LAKE
RUN NO: 10
DATE: July 4-5, 1972.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DEPTH (METRES)
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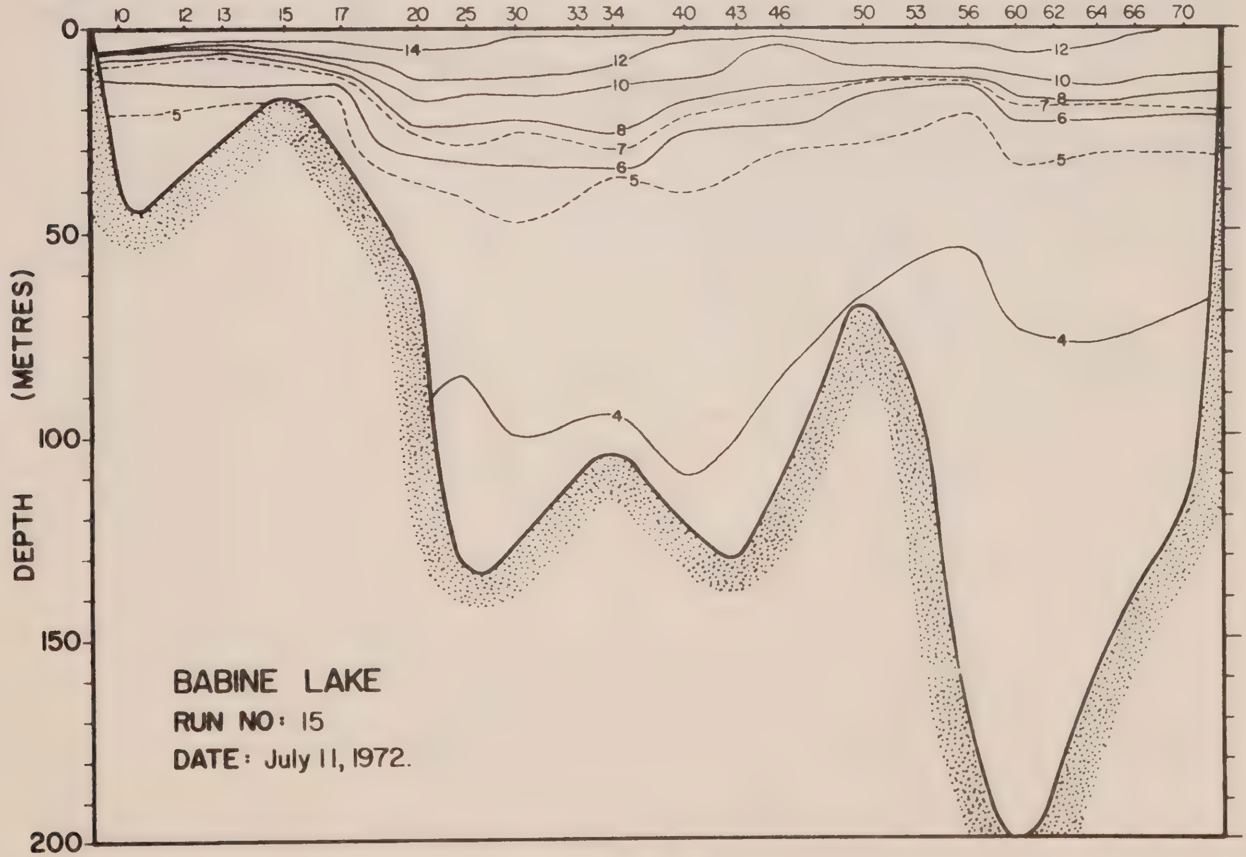
BABINE LAKE
RUN NO: 12
DATE: July 7-8, 1972.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DEPTH (METRES)
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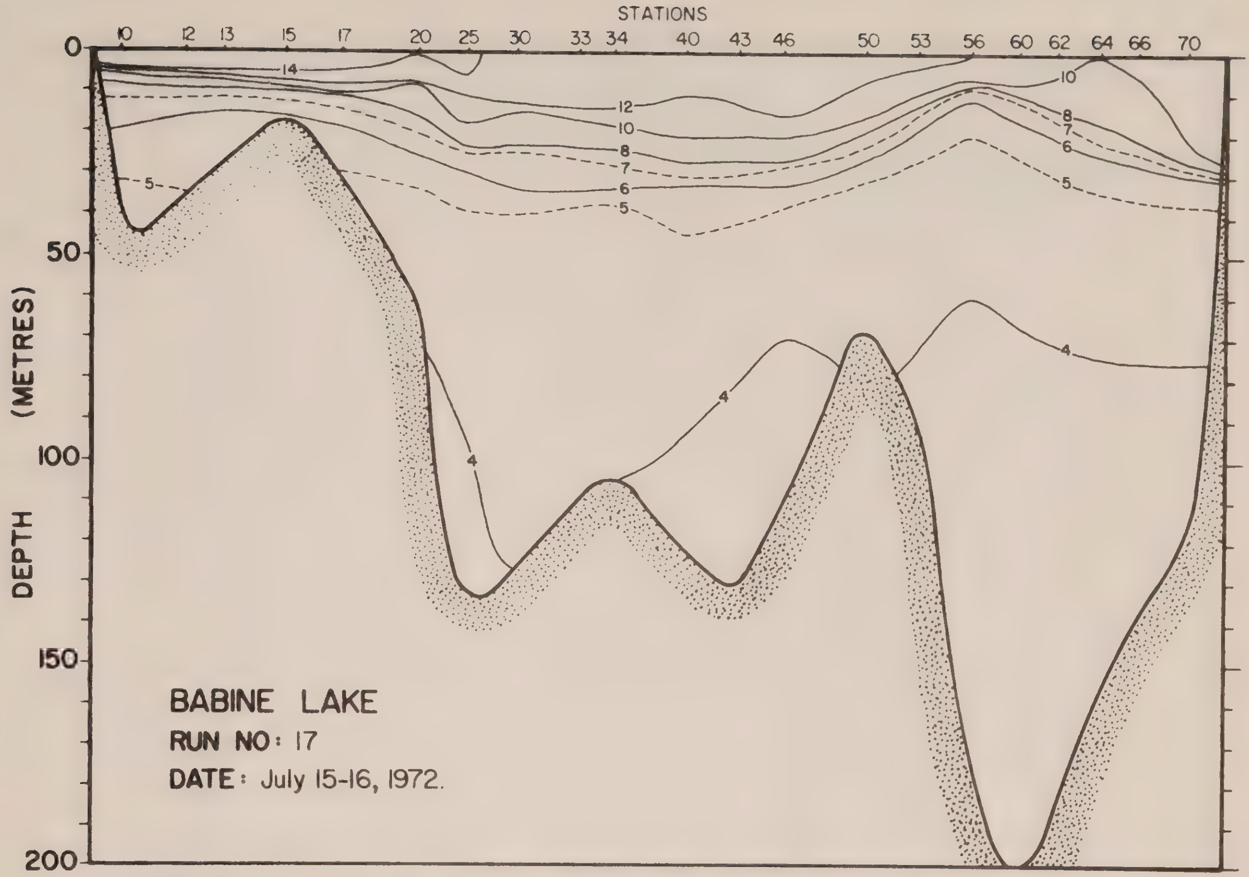
BABINE LAKE
RUN NO: 15
DATE: July 11, 1972.


STATIONS
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DEPTH (METRES)
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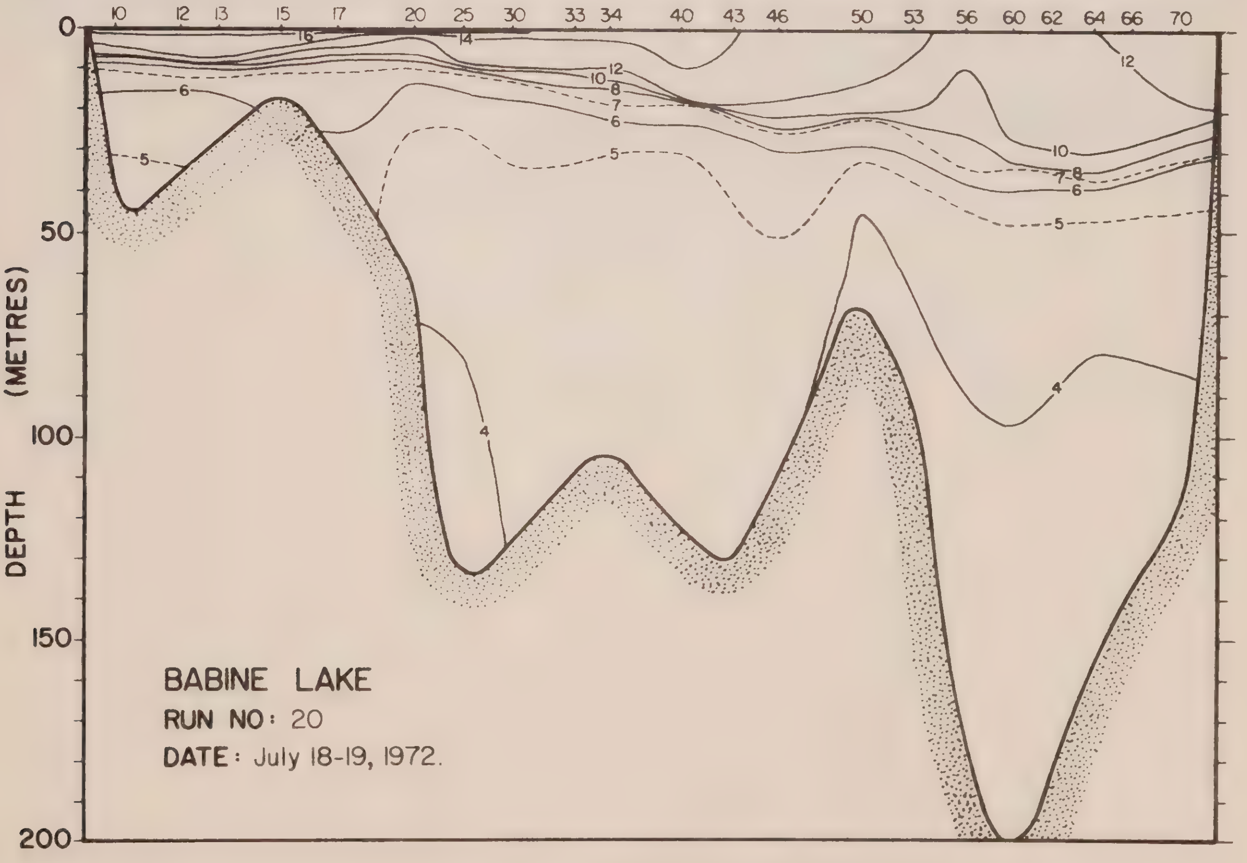
BABINE LAKE
RUN NO: 17
DATE: July 15-16, 1972.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DEPTH (METRES)
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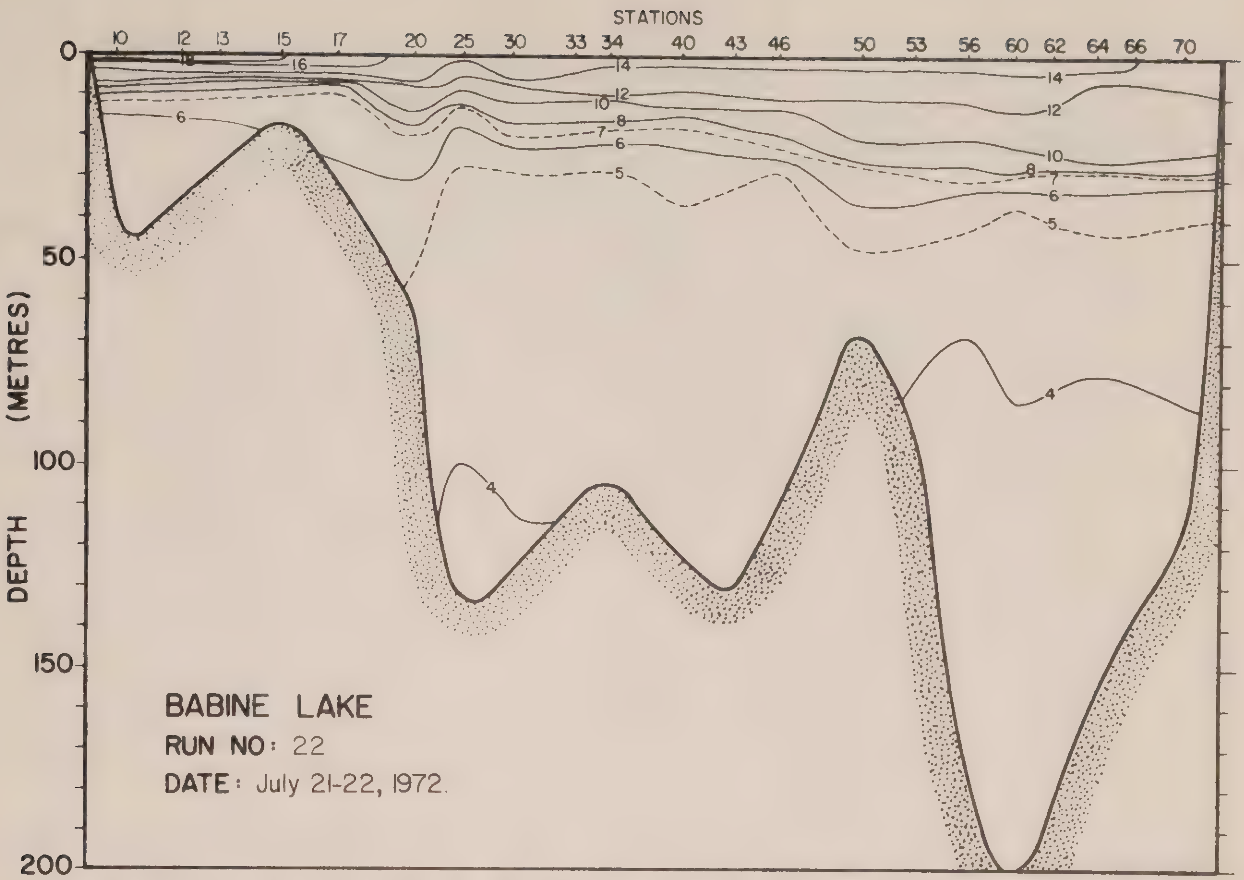
BABINE LAKE
RUN NO: 20
DATE: July 18-19, 1972.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DEPTH (METRES)
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BABINE LAKE
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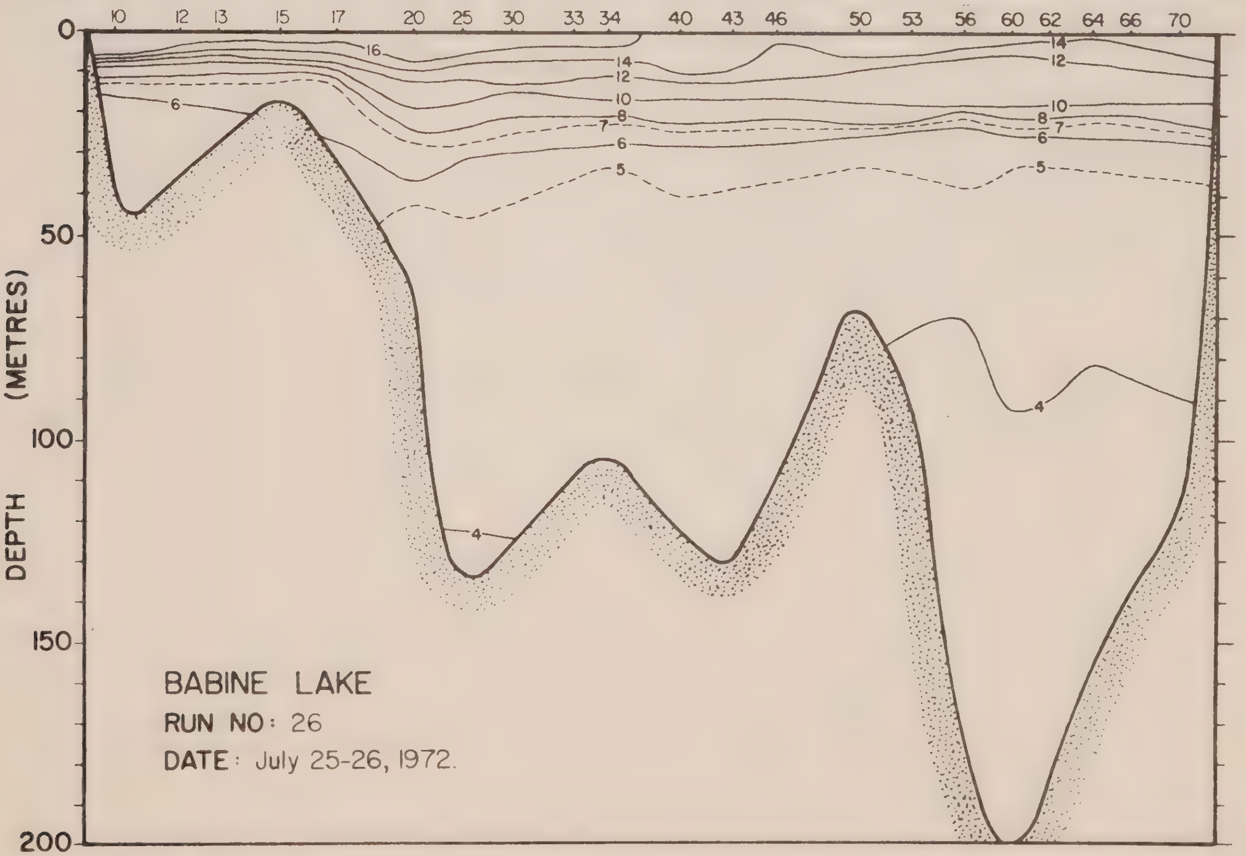
DATE: July 21-22, 1972.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BABINE LAKE
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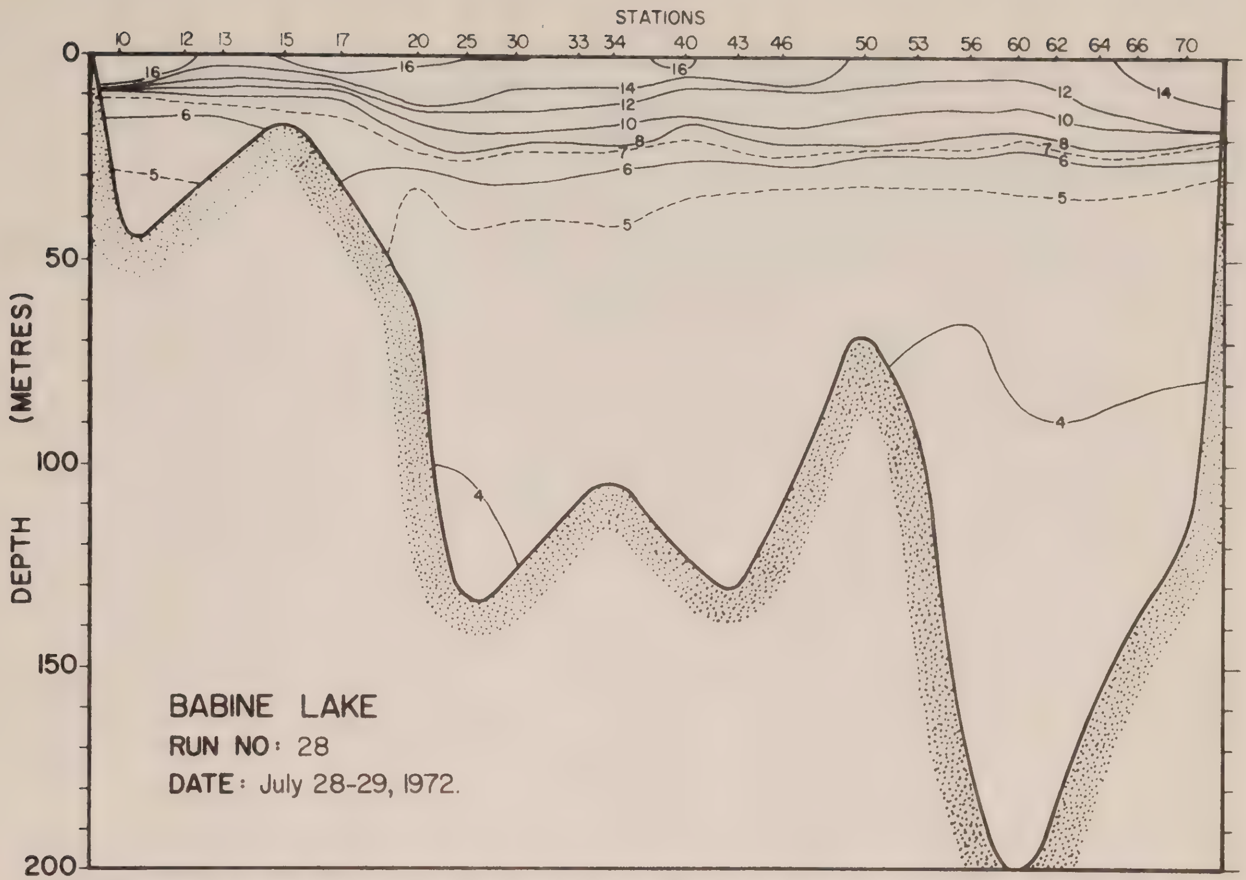
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200
DEPTH (METRES)
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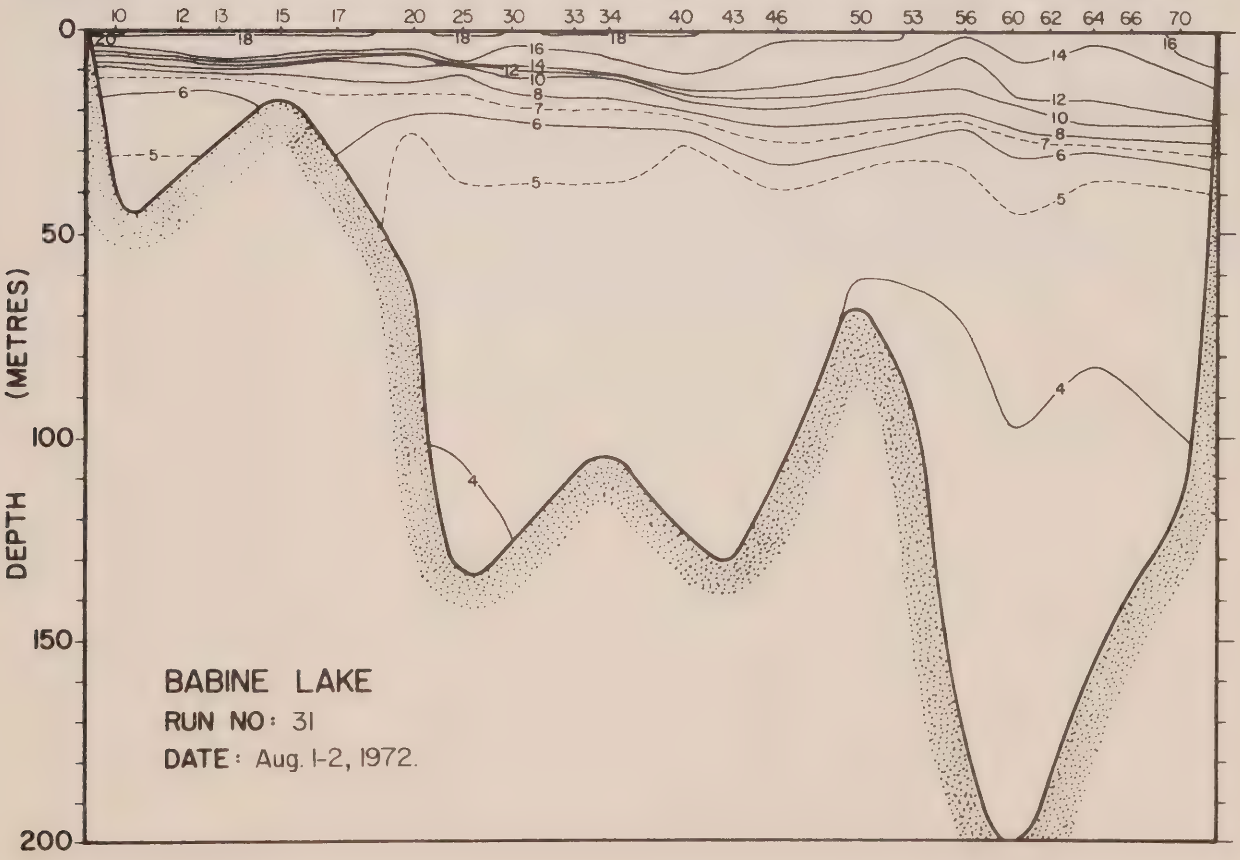
BABINE LAKE
RUN NO: 28
DATE: July 28-29, 1972.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DEPTH (METRES)
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BABINE LAKE
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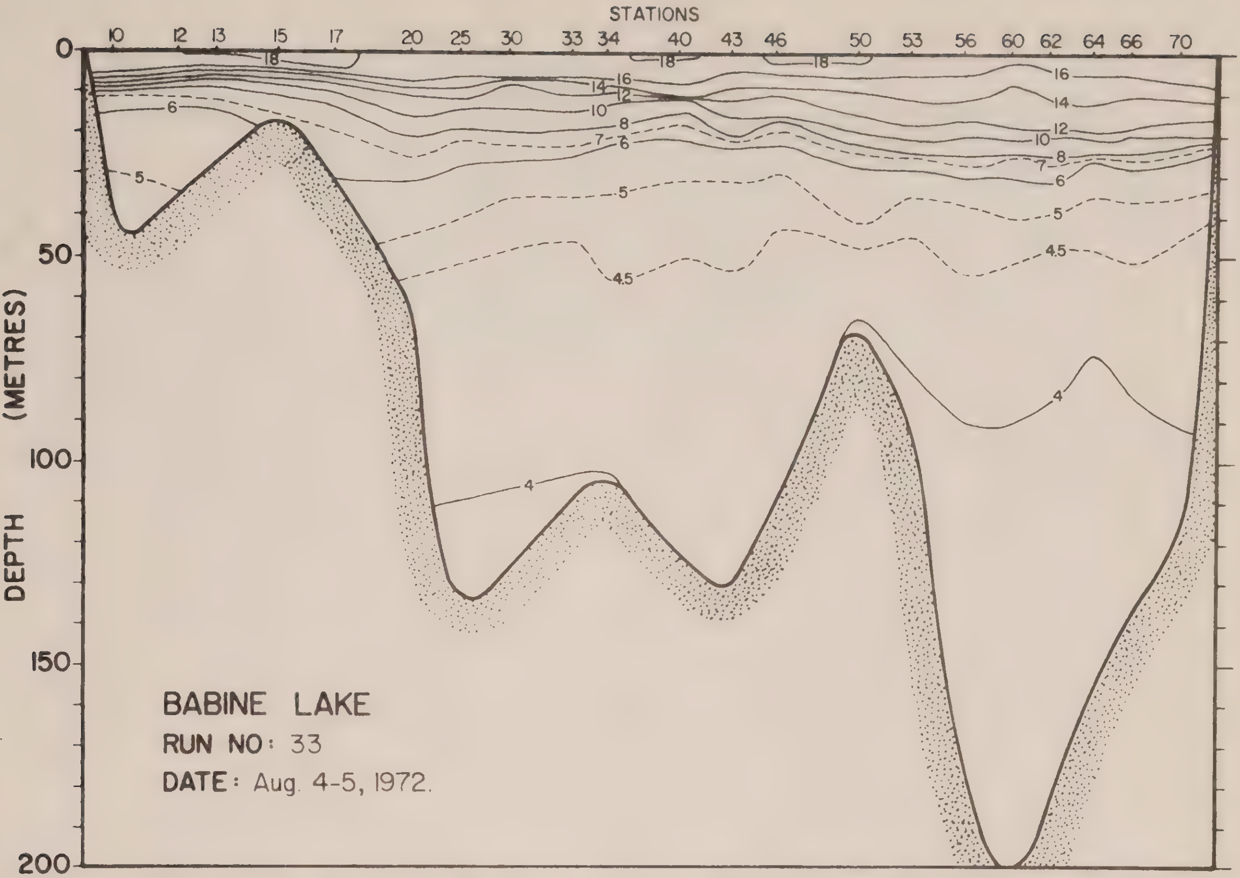
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DEPTH (METRES)
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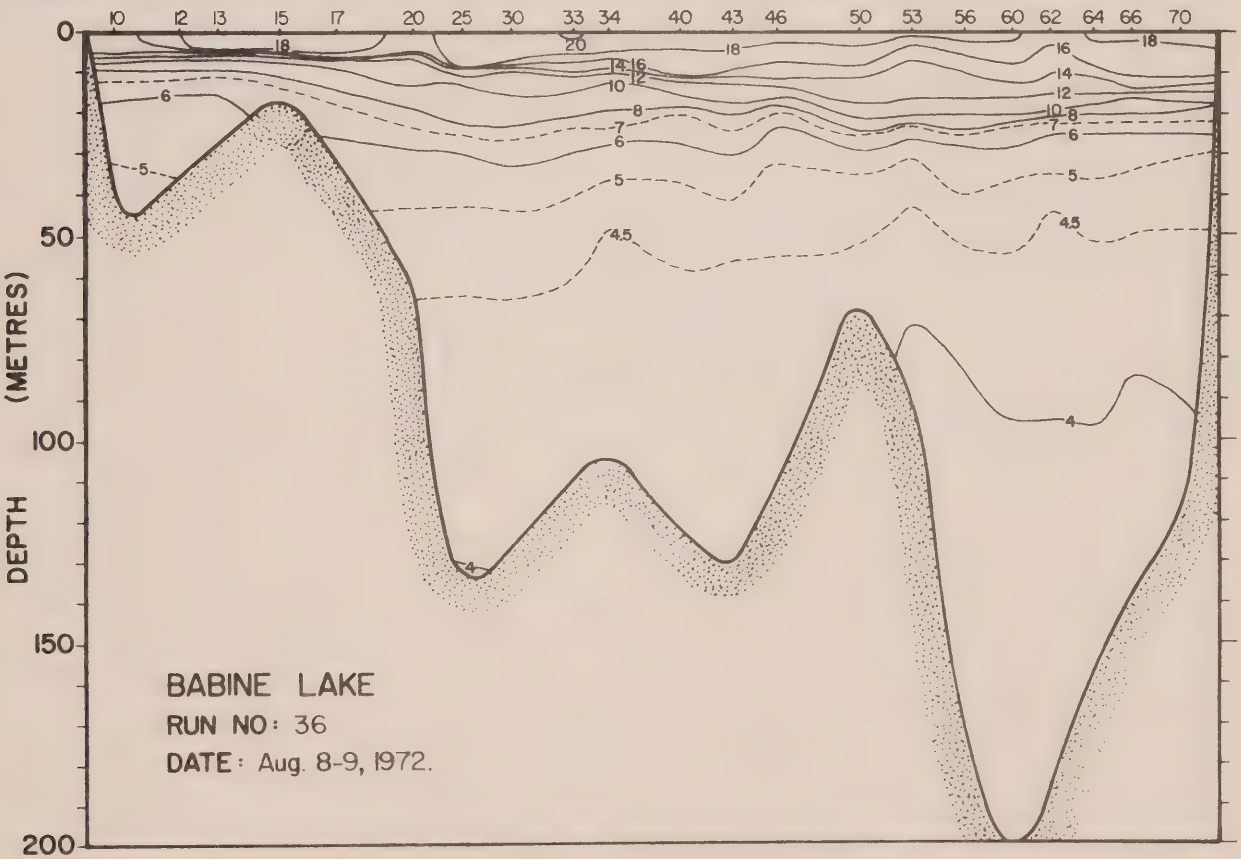
BABINE LAKE
RUN NO: 33
DATE: Aug. 4-5, 1972.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BABINE LAKE
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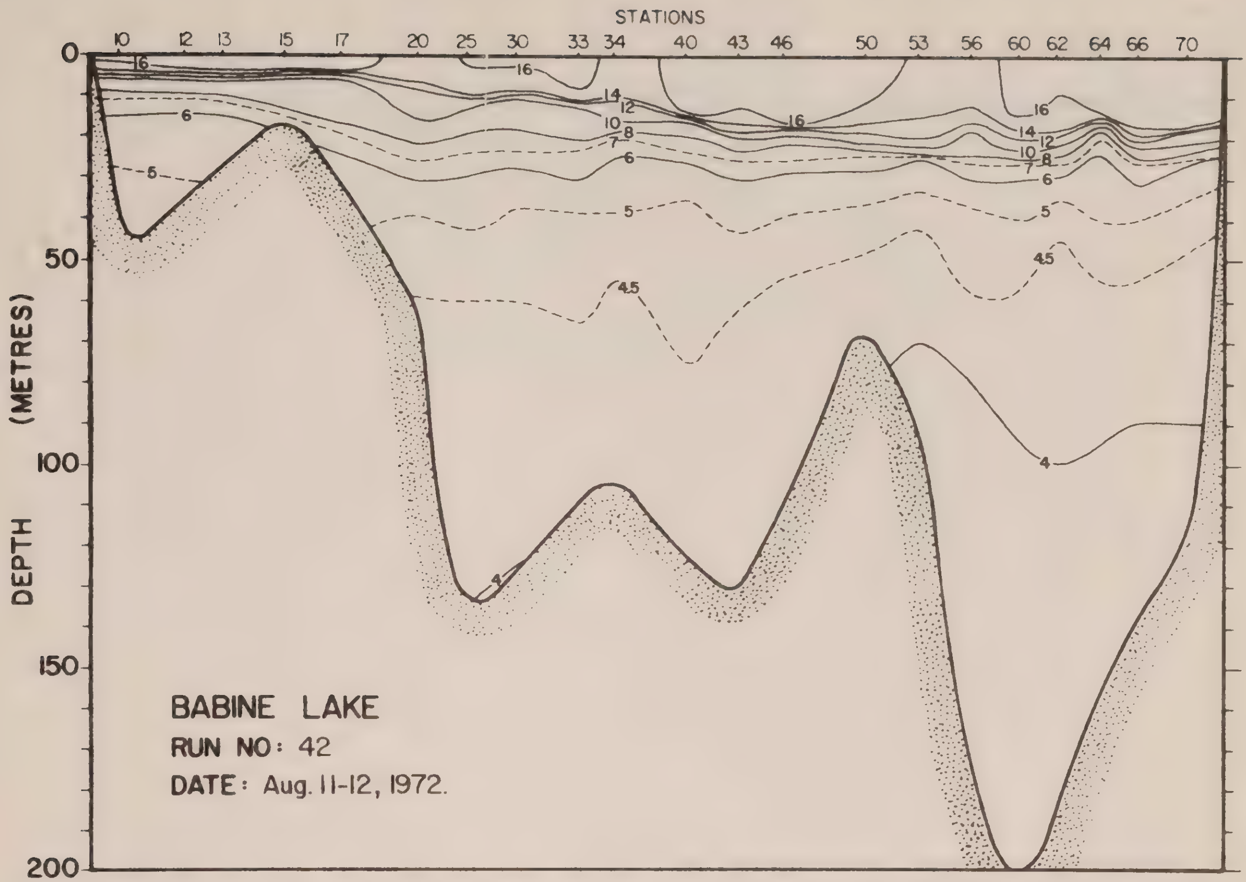
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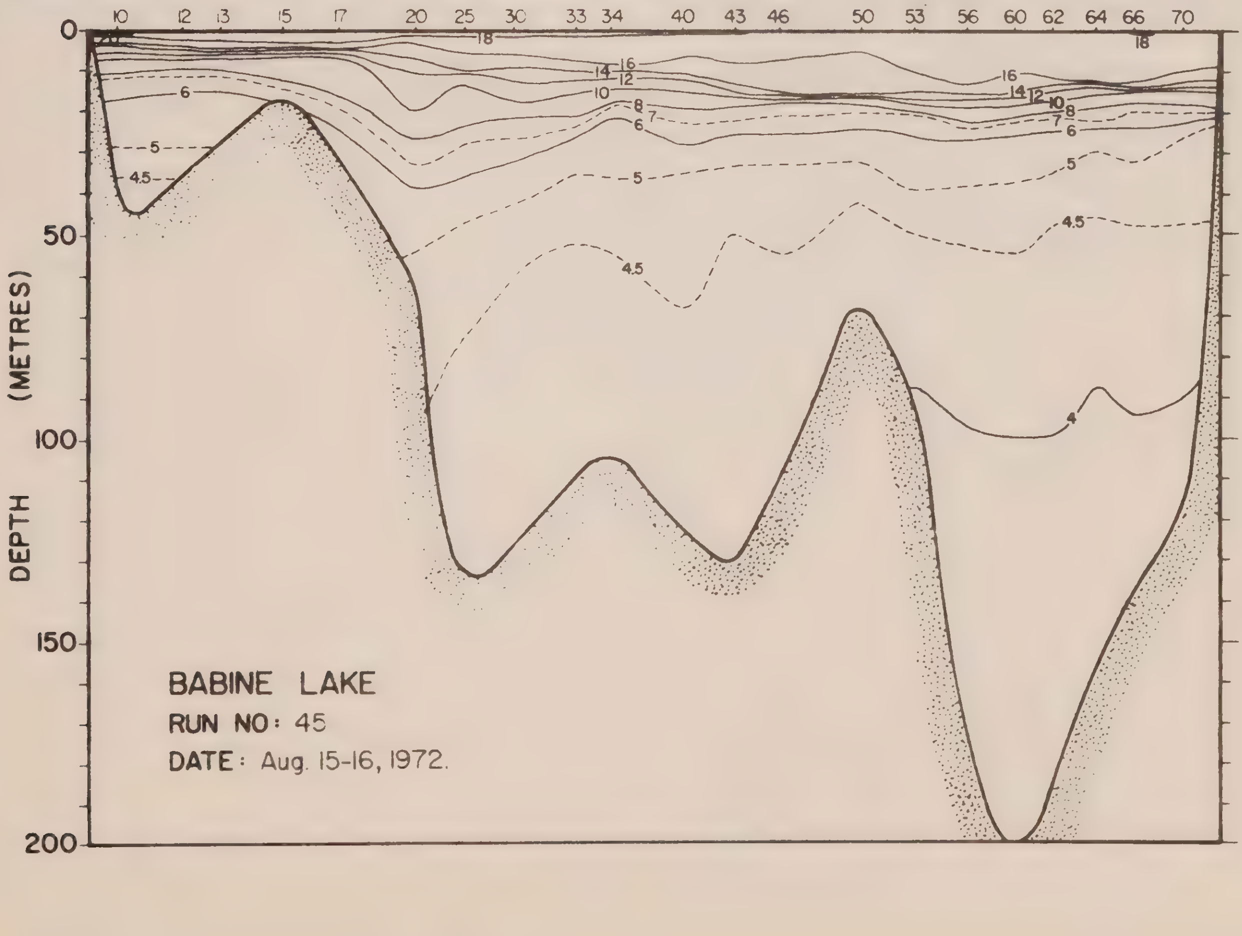
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DEPTH (METRES)
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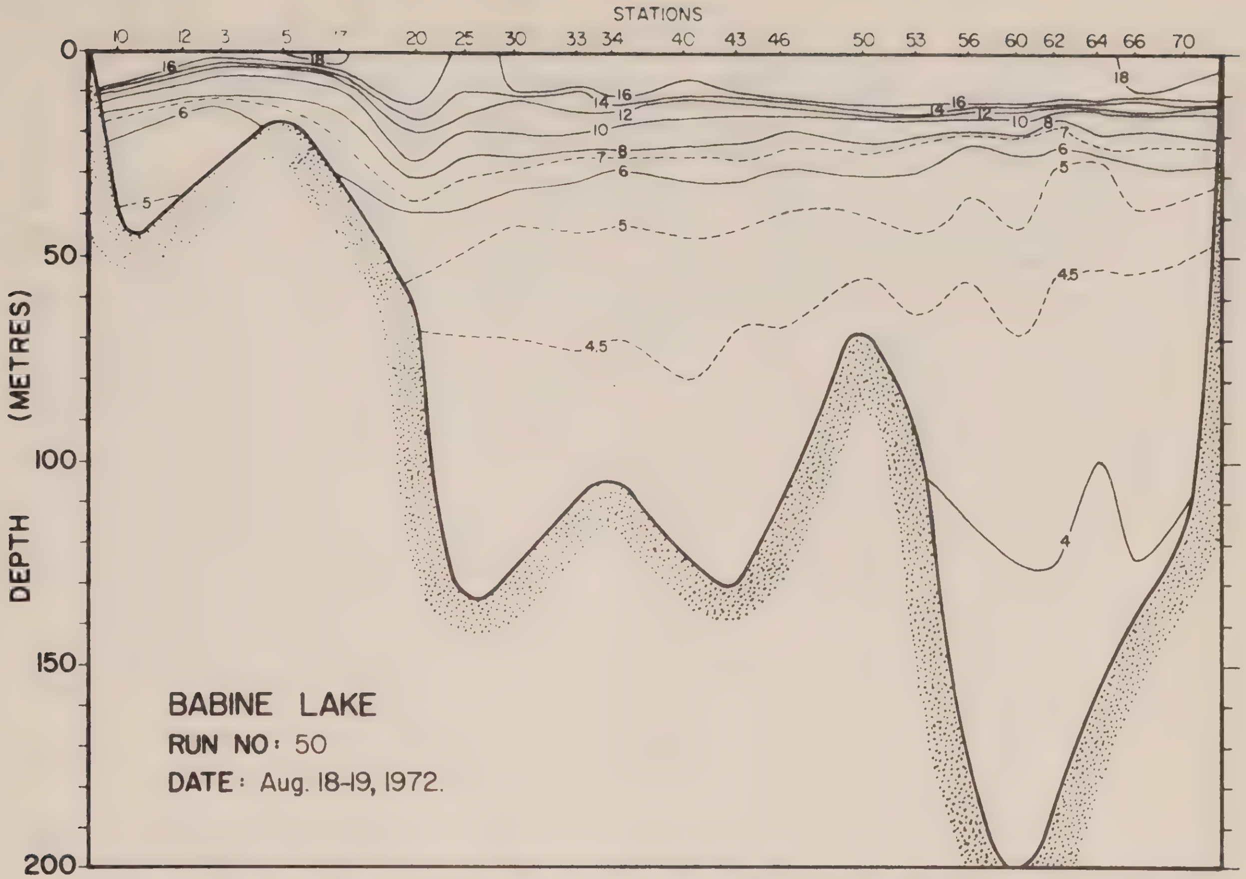
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DEPTH (METRES)
BABINE LAKE
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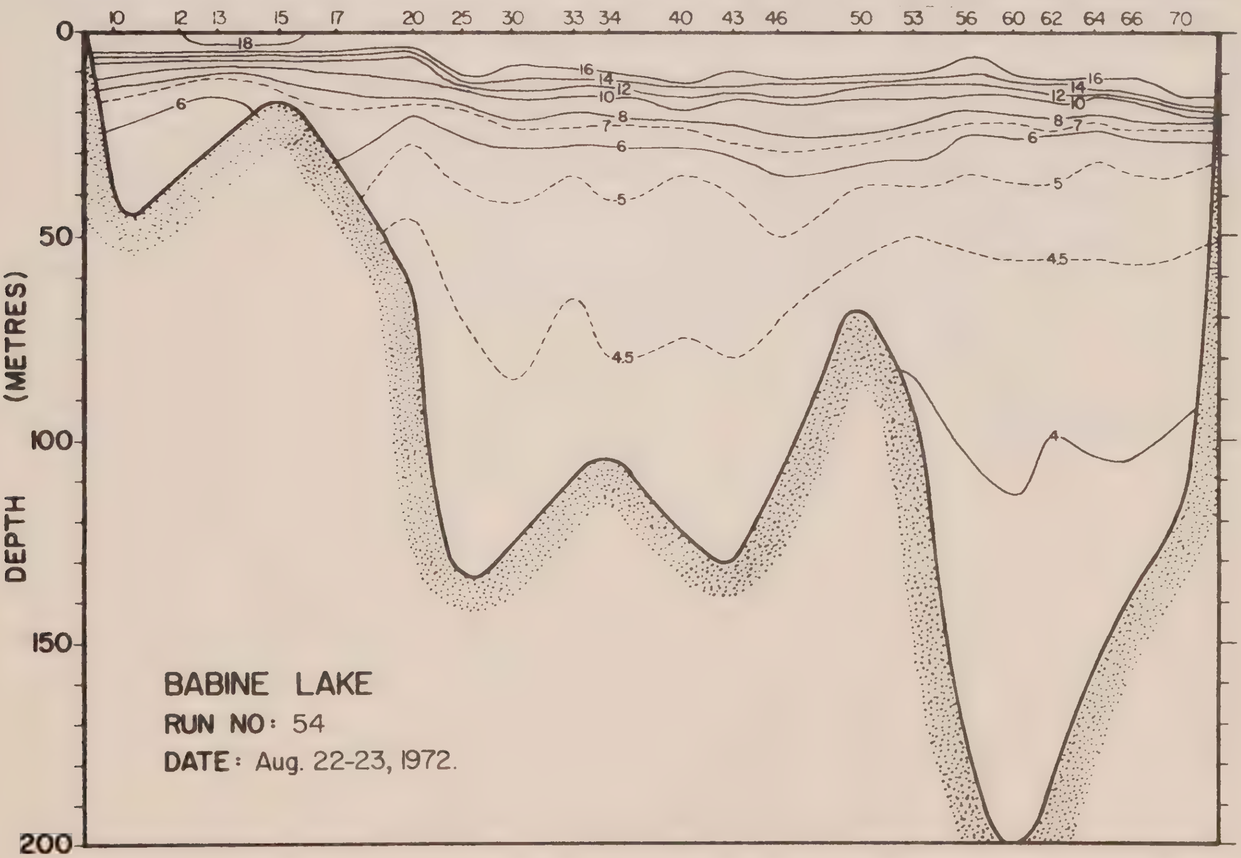
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BABINE LAKE
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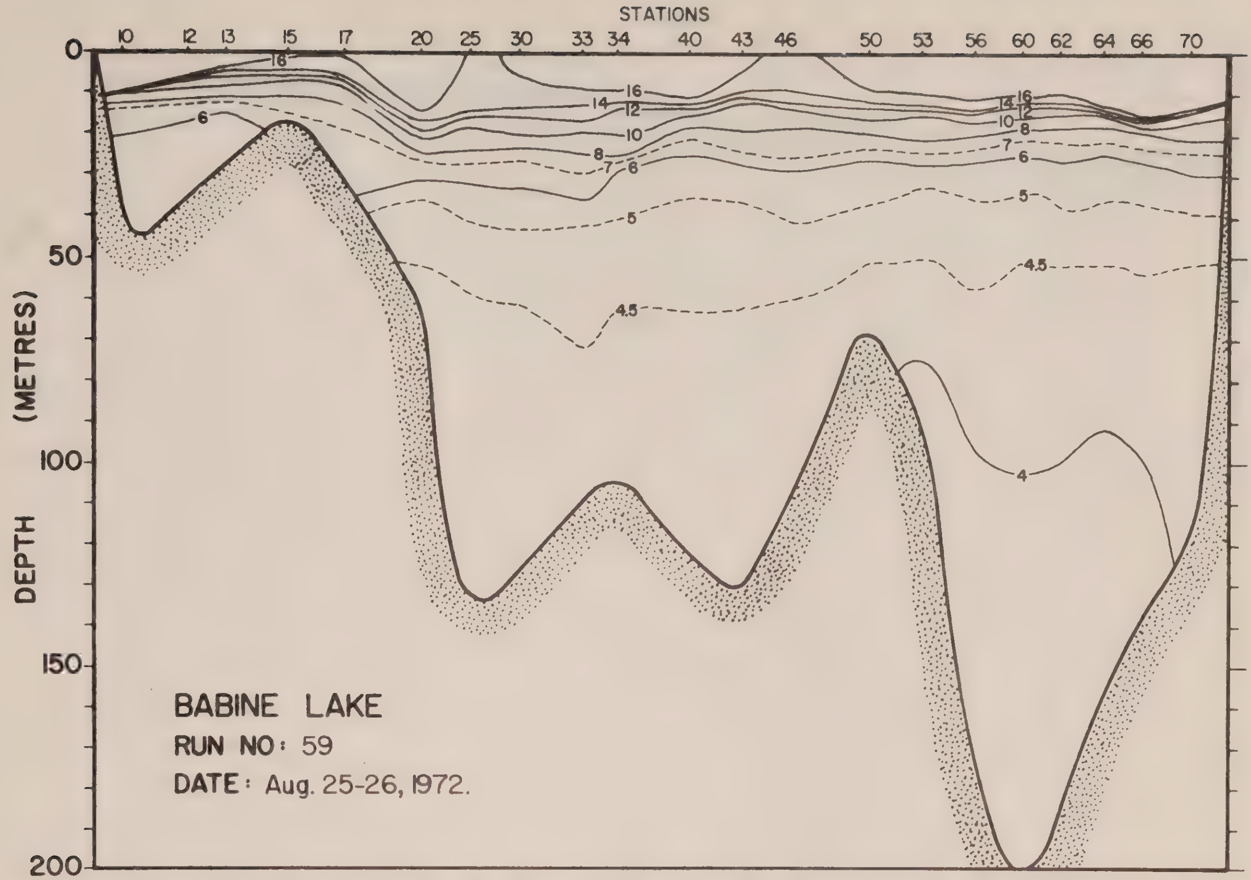
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DEPTH (METRES)
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4.5
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BABINE LAKE
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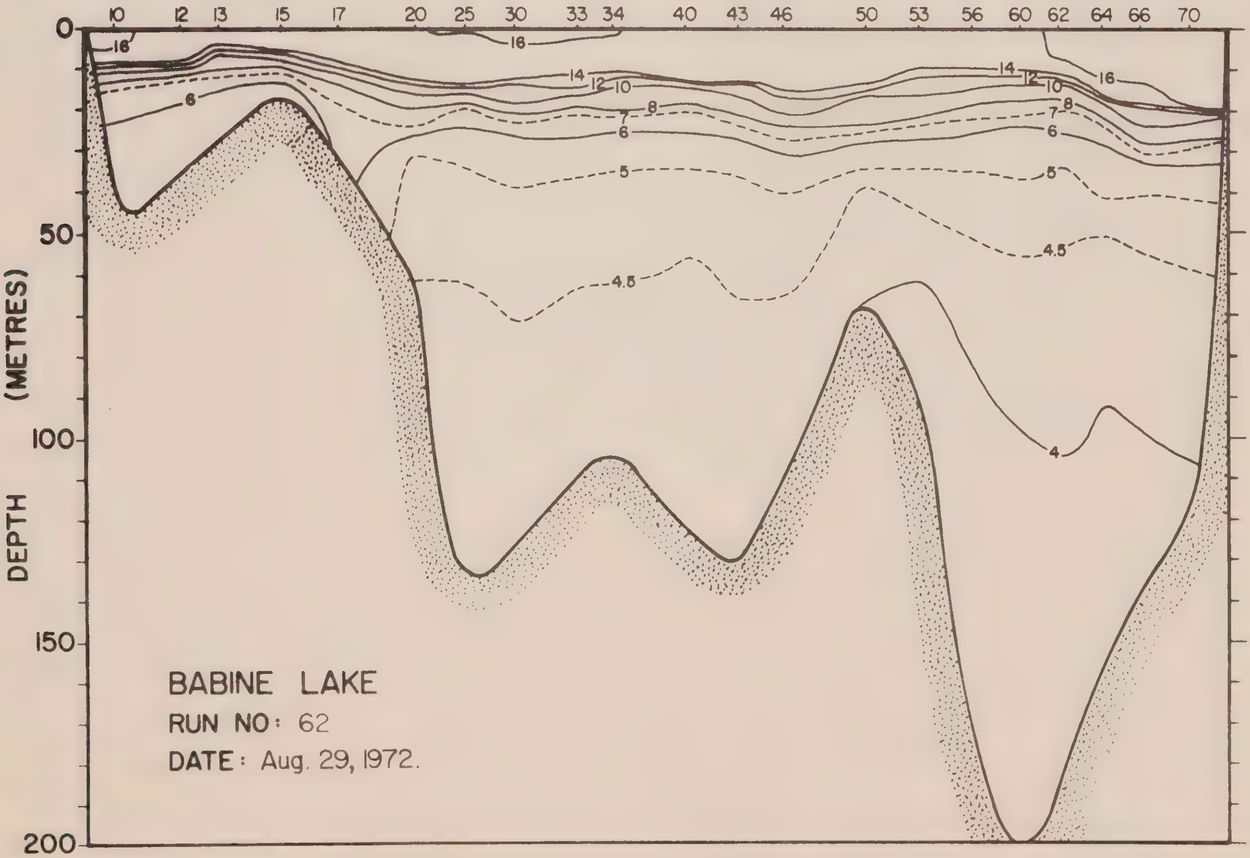
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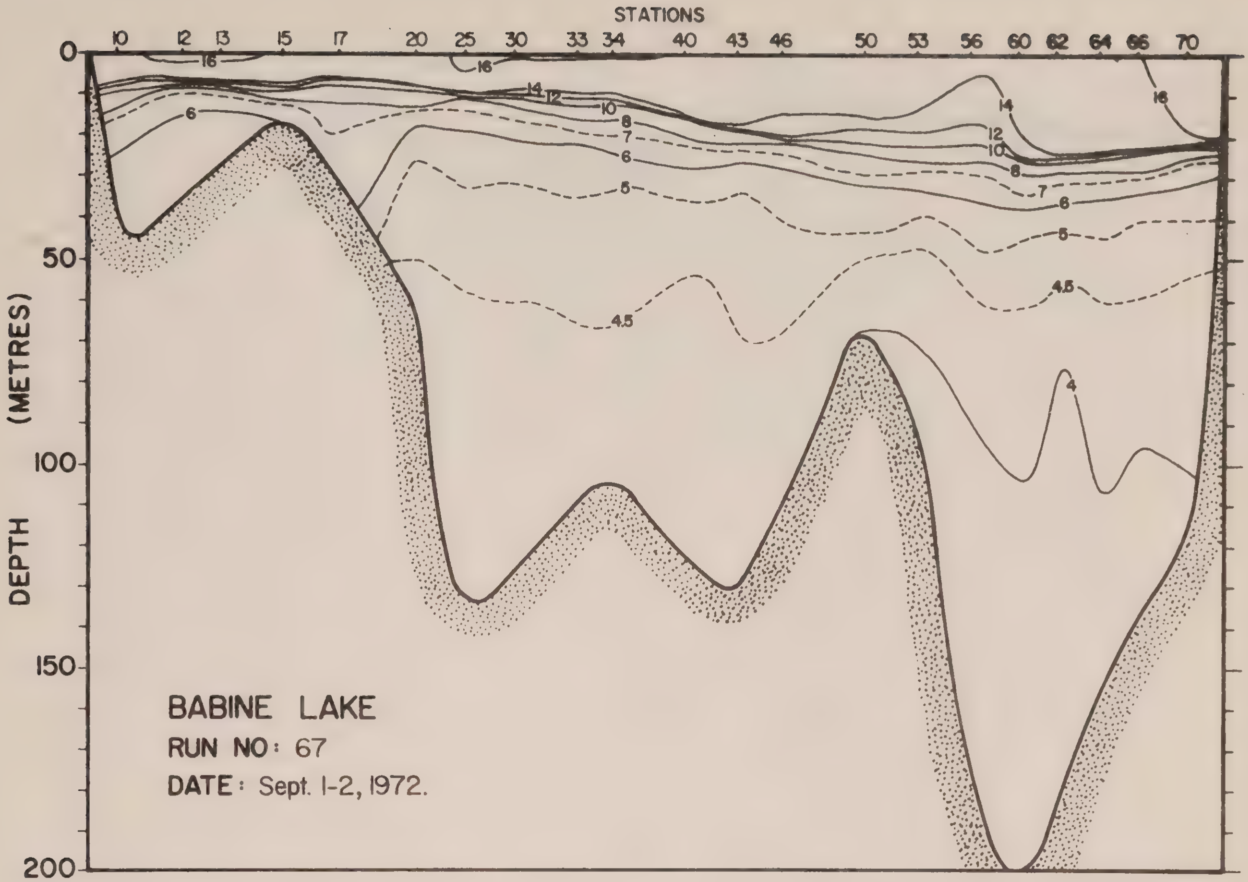
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50
100
150
200
DEPTH (METRES)
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4.5
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BABINE LAKE
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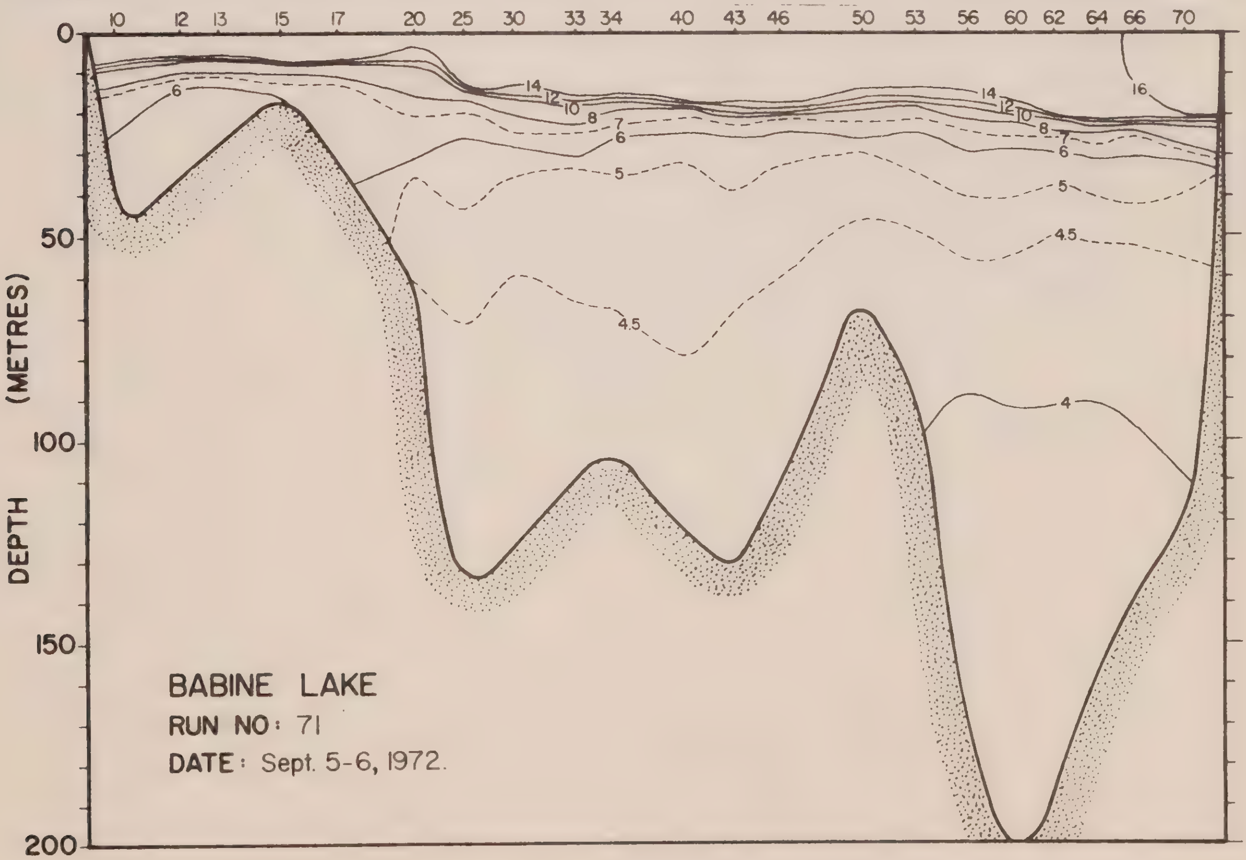
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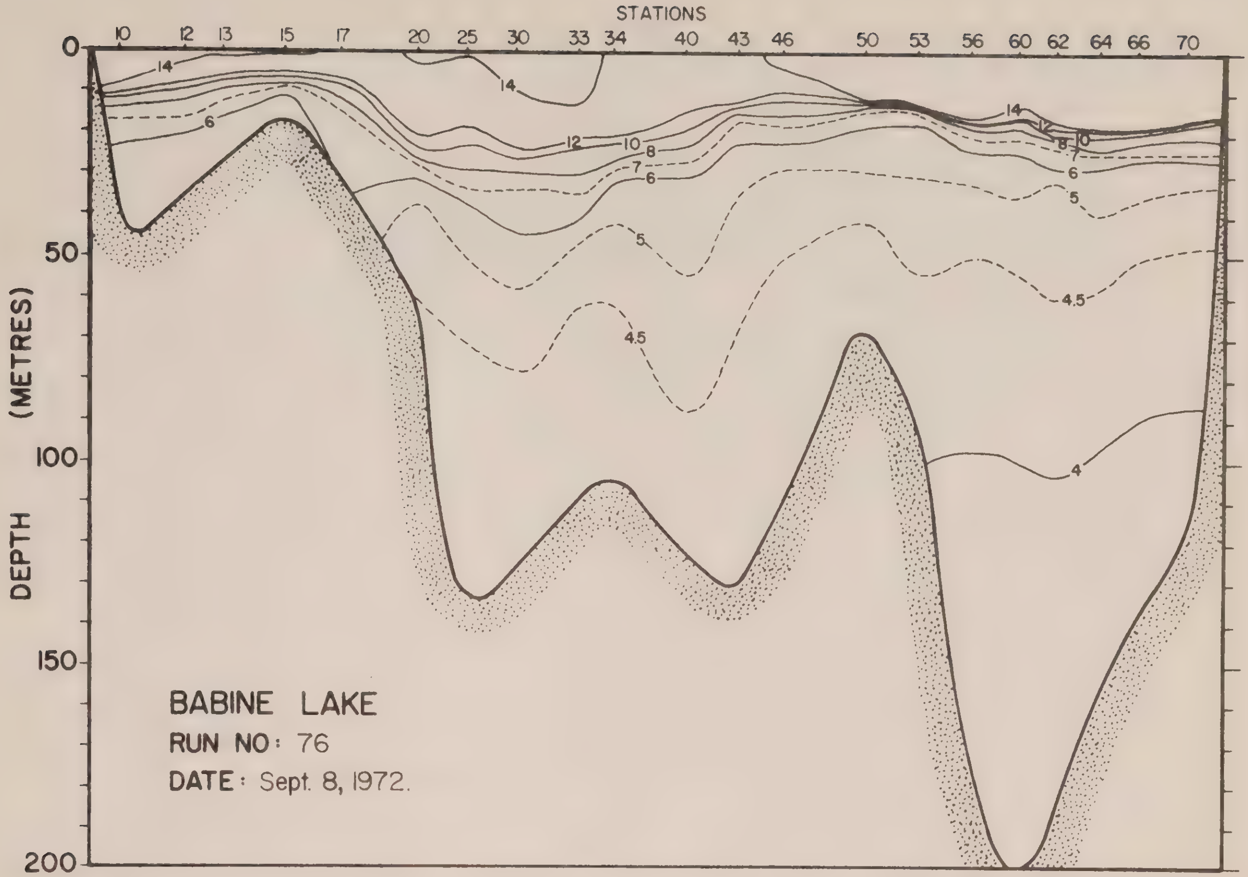
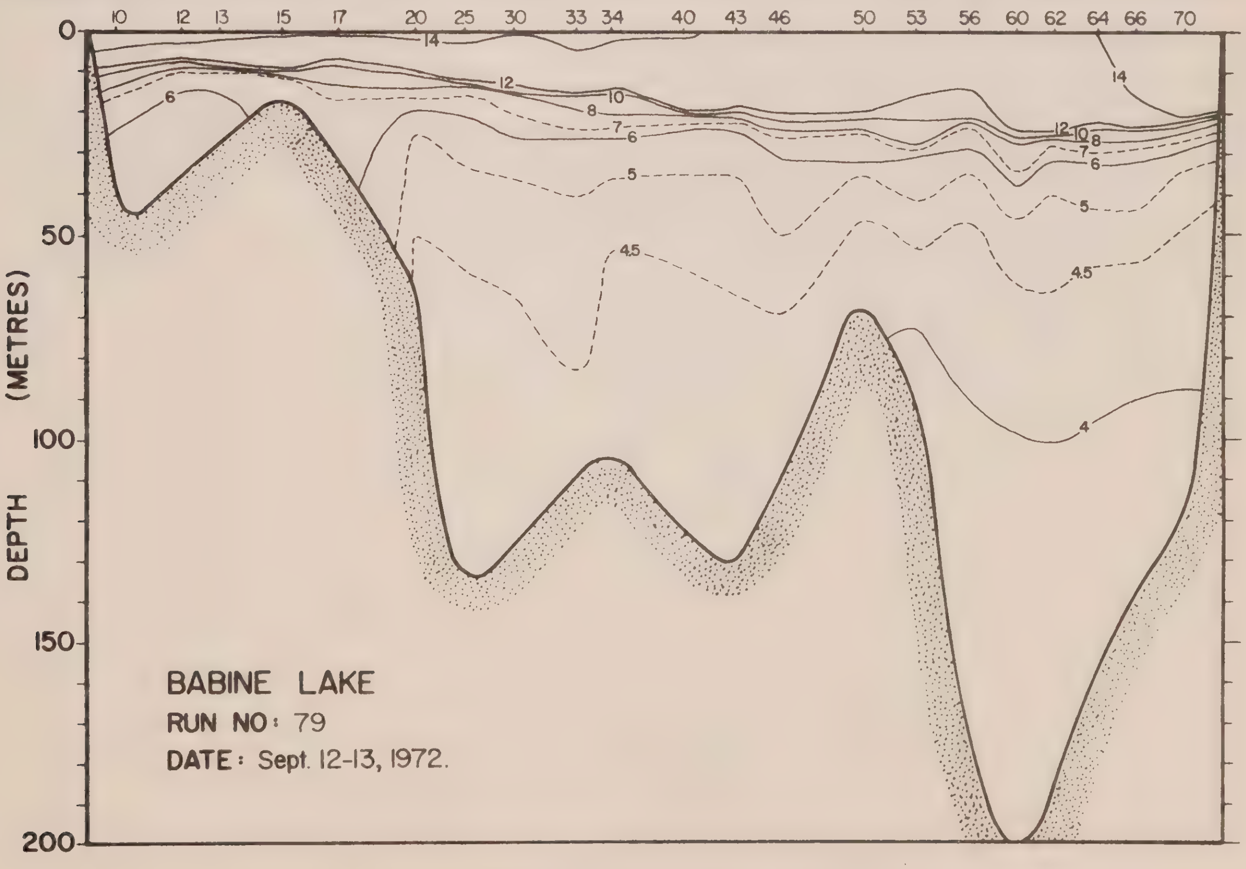
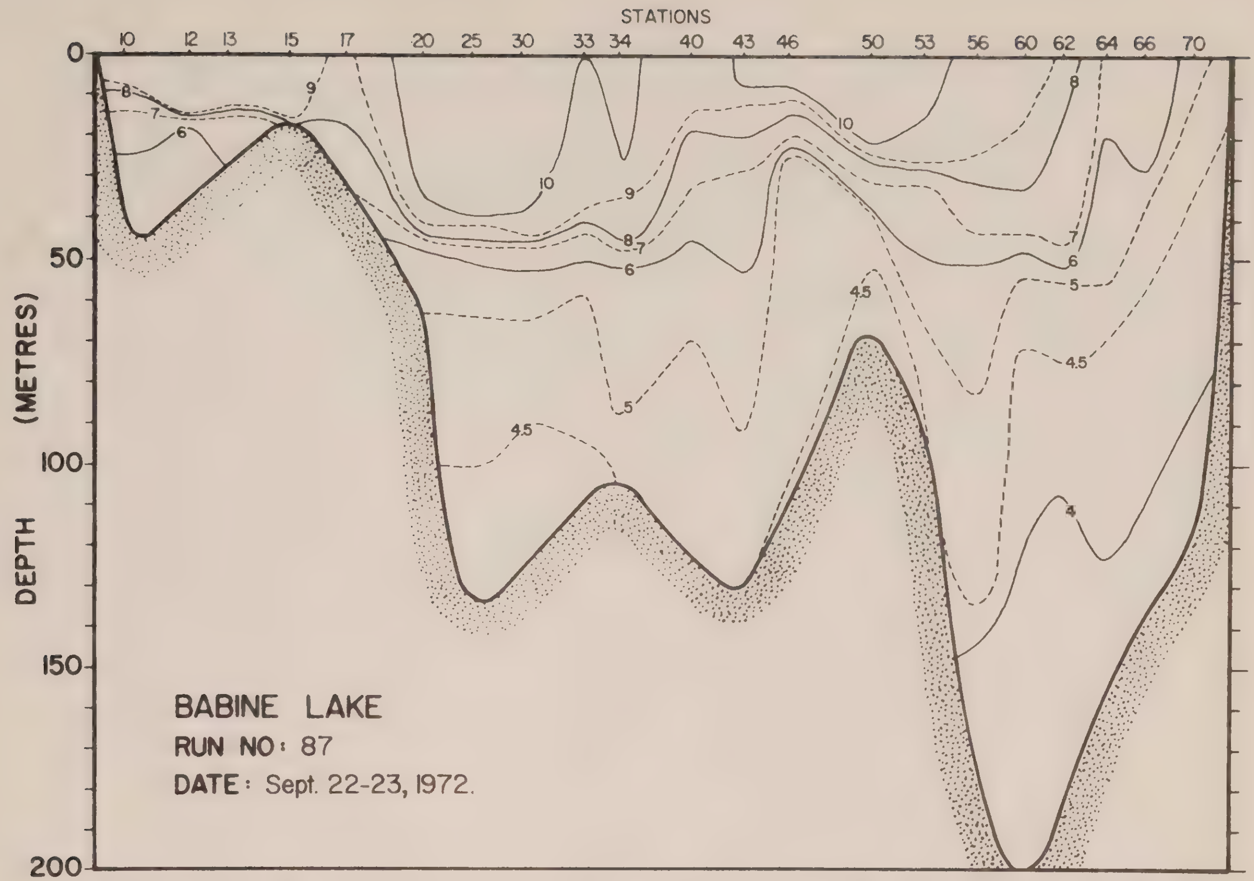
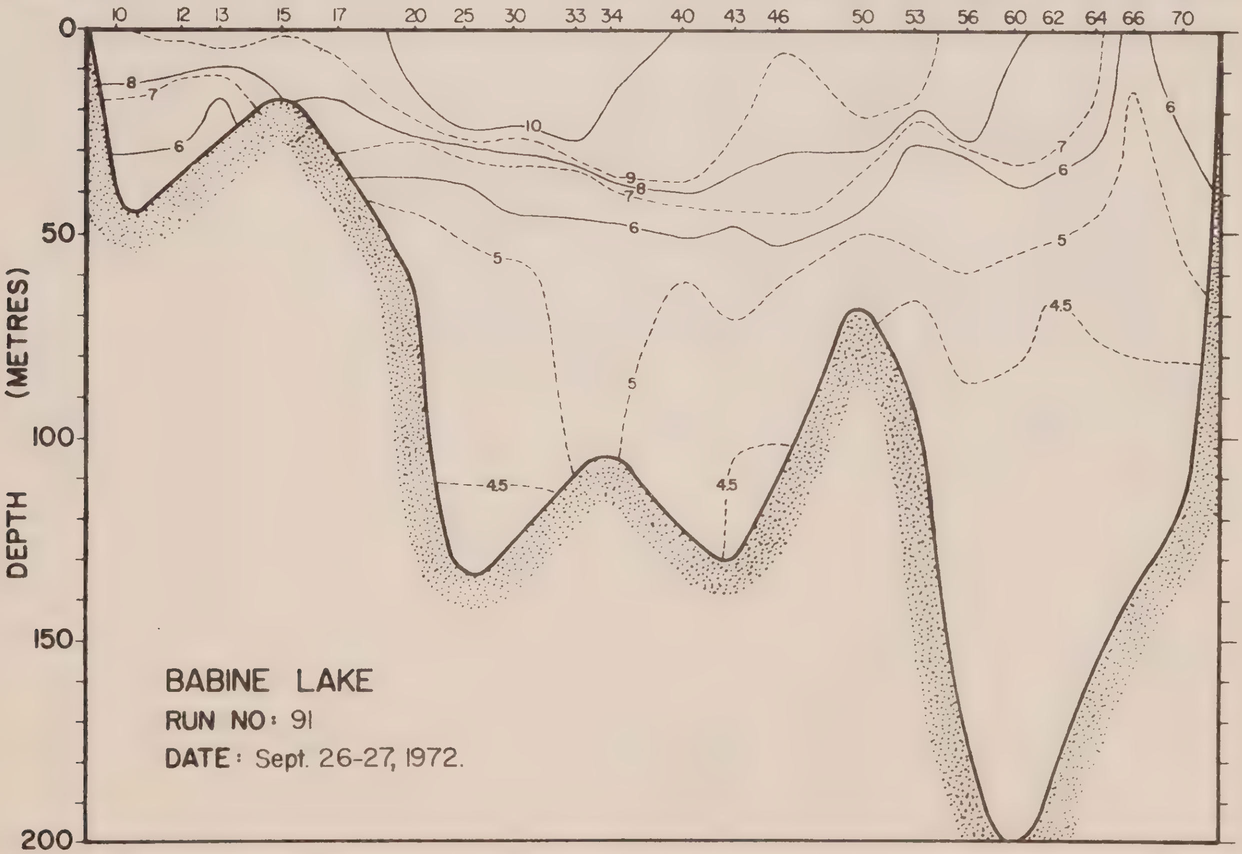
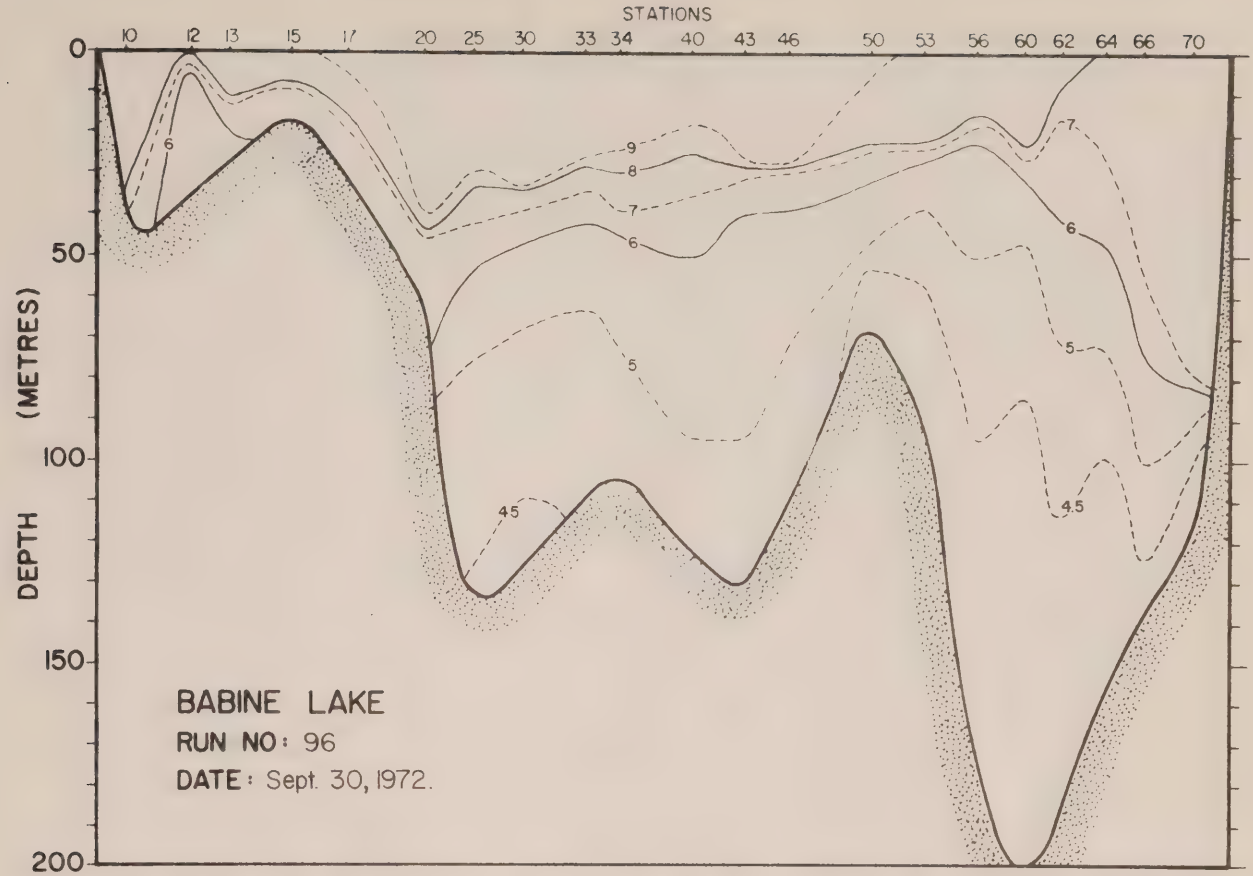
70
0
50
100
150
200
DEPTH (METRES)
16
14
12
10
8
7
6
5
4.5
4
BABINE LAKE
RUN NO: 71
DATE: Sept. 5-6, 1972.

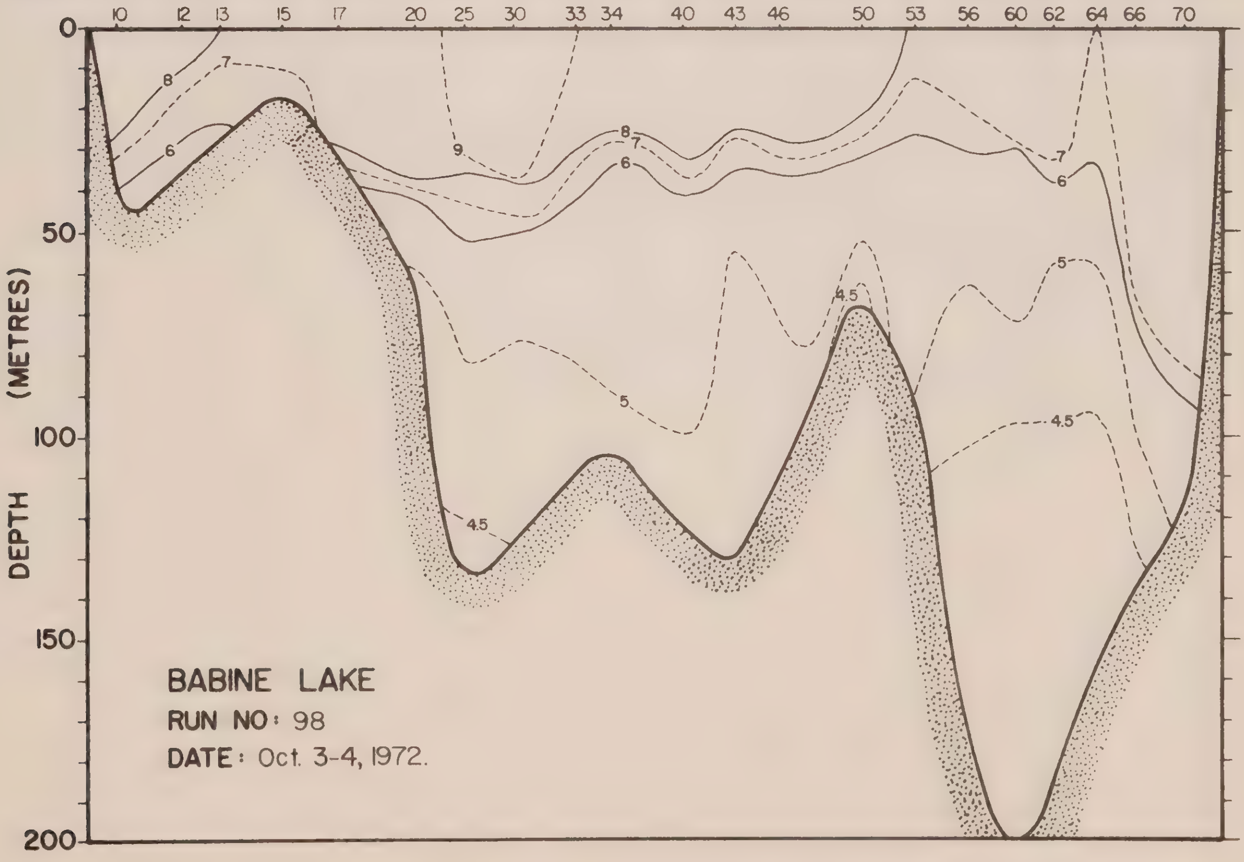

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
14
12
10
8
7
6
5
4.5
4
BABINE LAKE
RUN NO: 76
DATE: Sept. 8, 1972.

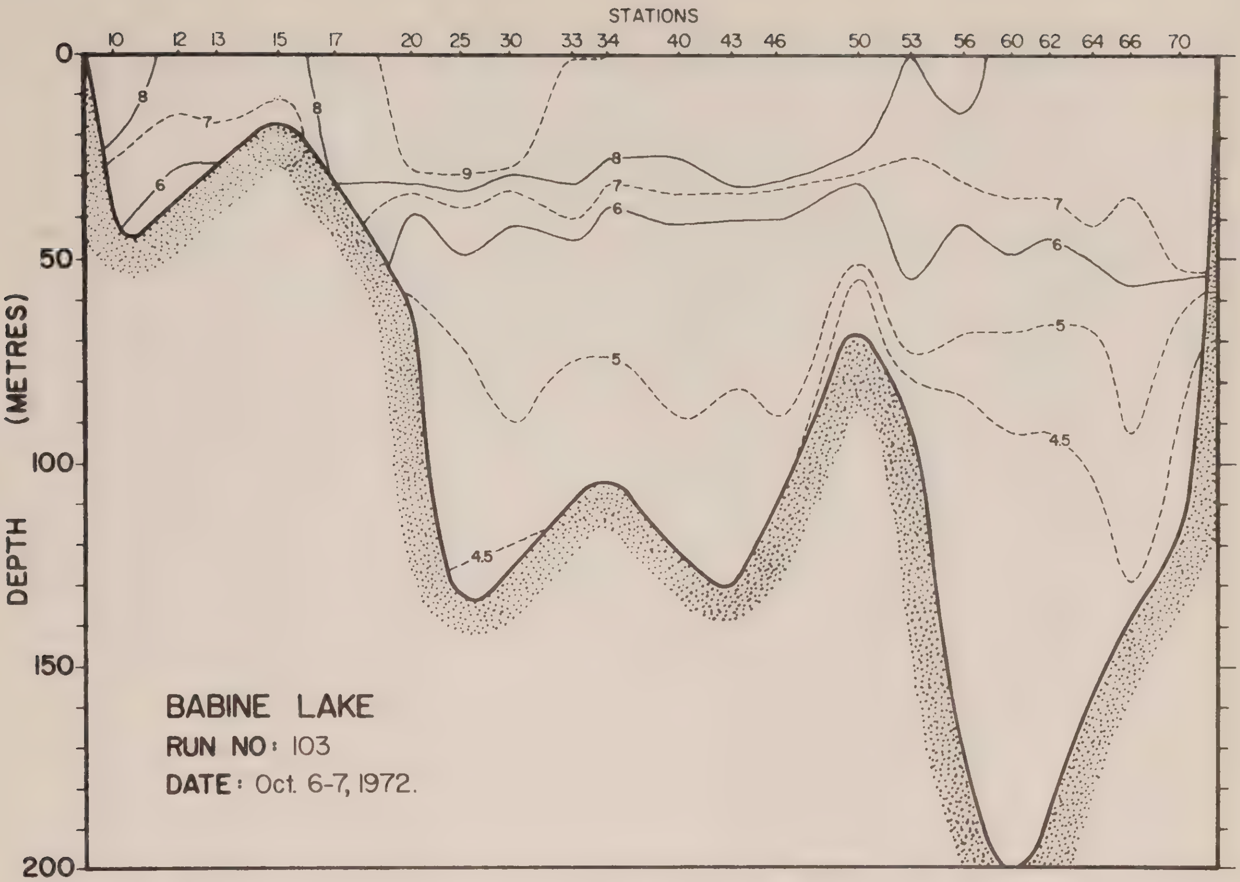

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
14
12
10
8
7
6
5
4.5
4
BABINE LAKE
RUN NO: 79
DATE: Sept. 12-13, 1972.

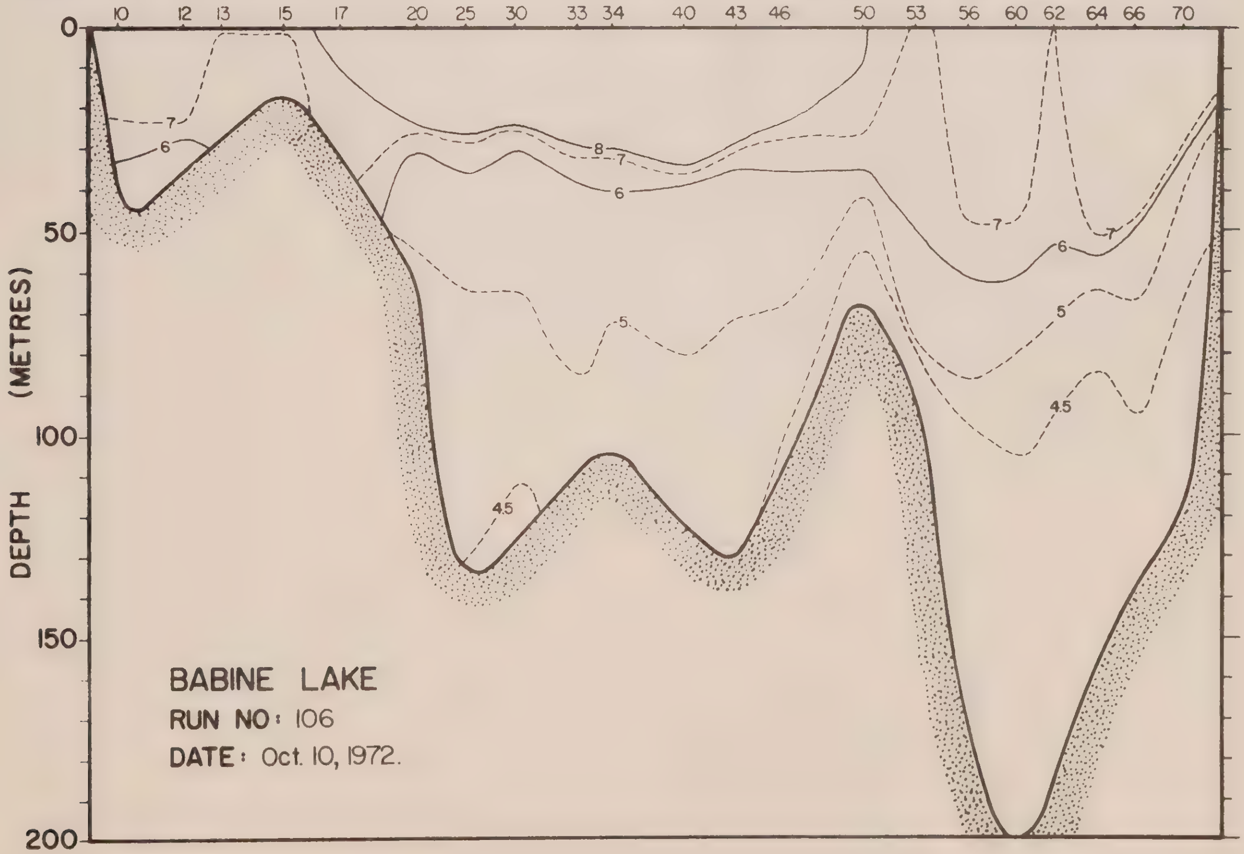

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
50
100
150
200
DEPTH (METRES)
BABINE LAKE
RUN NO: 87
DATE: Sept. 22-23, 1972.

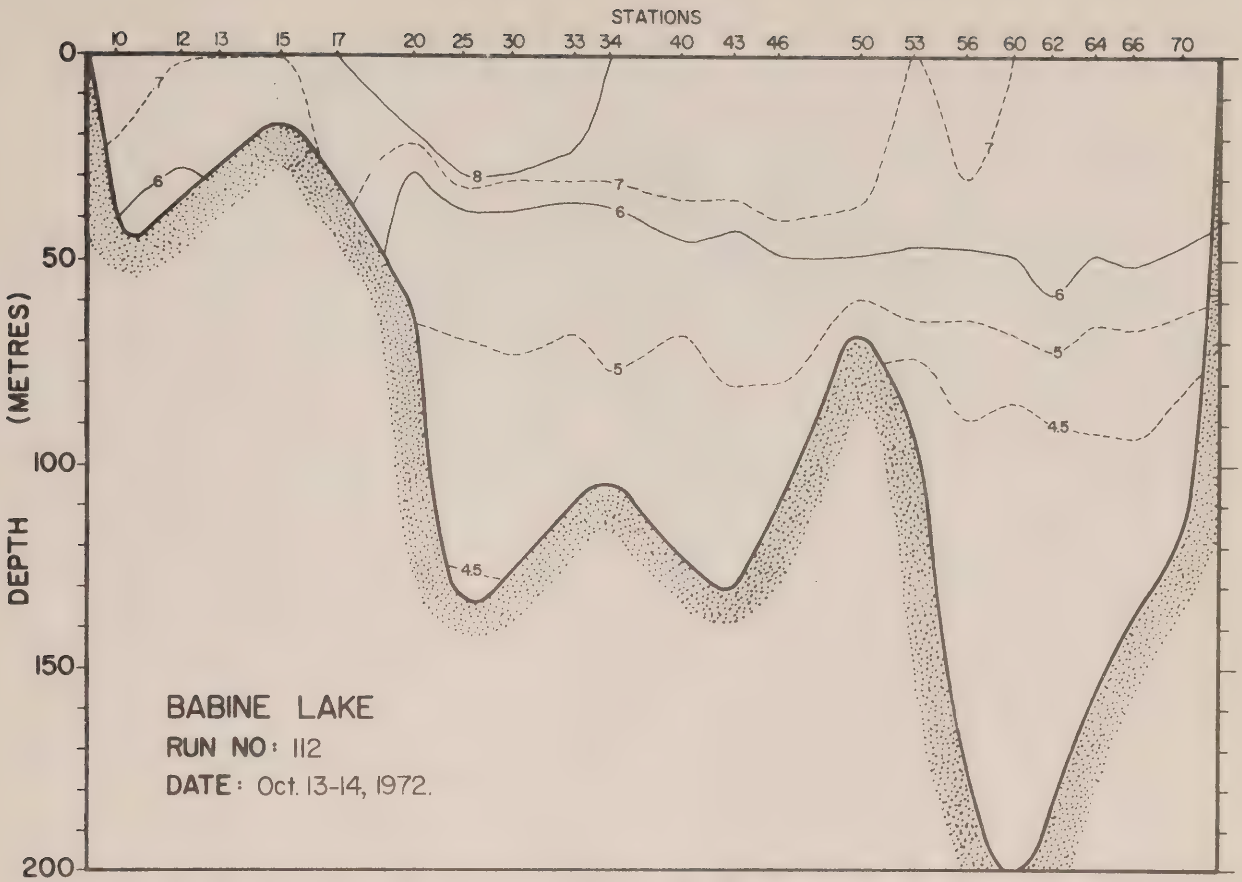

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
50
100
150
200
DEPTH (METRES)
BABINE LAKE
RUN NO: 91
DATE: Sept. 26-27, 1972.

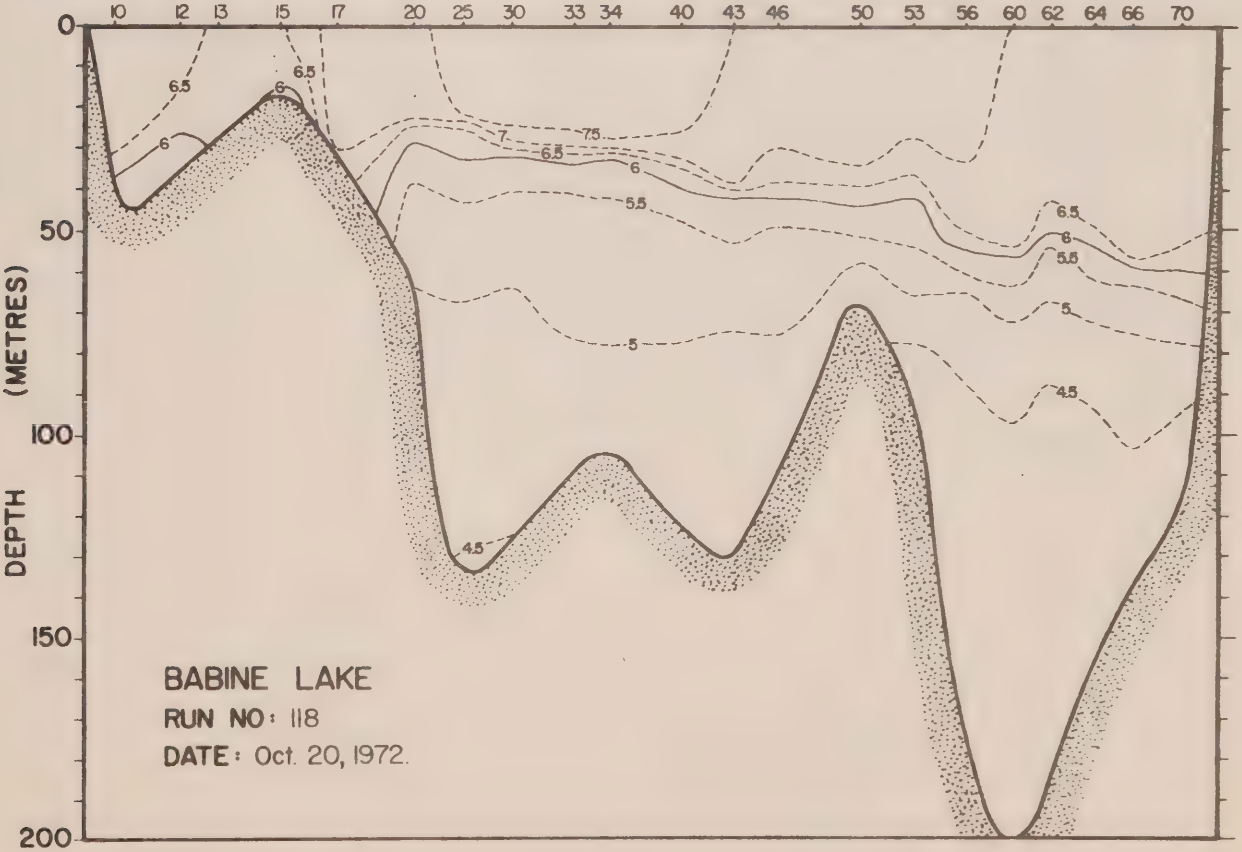

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
9
8
7
6
5
4.5
BABINE LAKE
RUN NO: 96
DATE: Sept. 30, 1972.

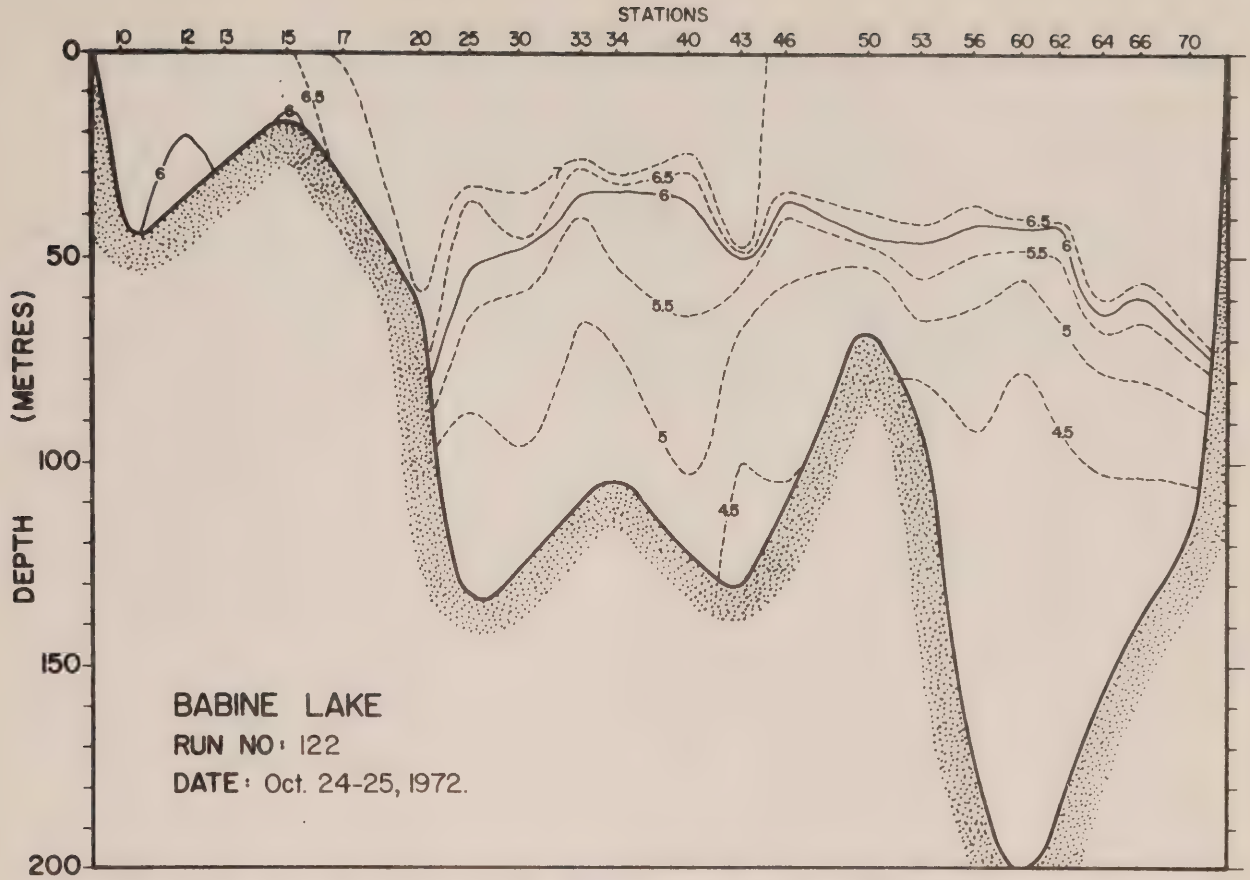

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
9
8
7
6
5
4.5
BABINE LAKE
RUN NO: 98
DATE: Oct. 3-4, 1972.

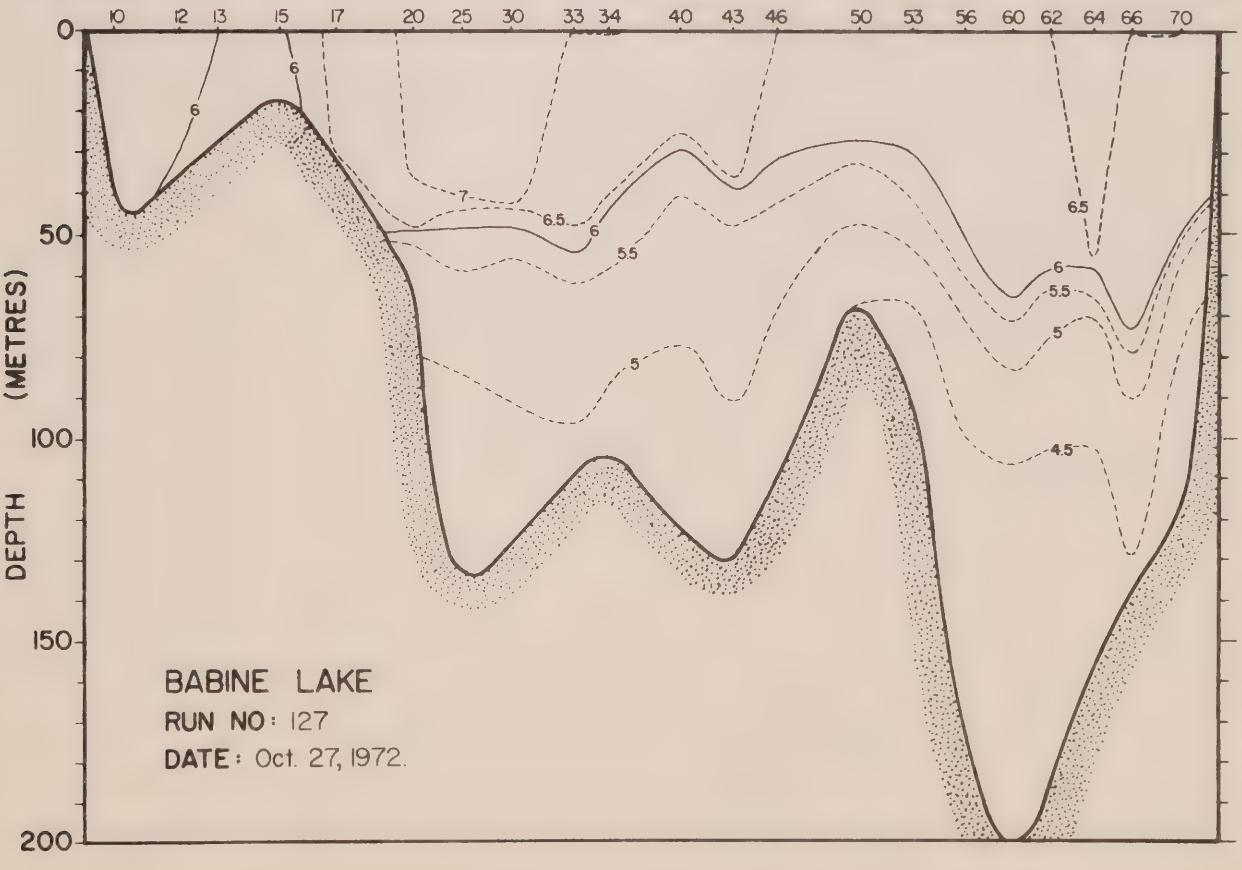

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
8
7
6
9
5
4.5
BABINE LAKE
RUN NO: 103
DATE: Oct. 6-7, 1972.

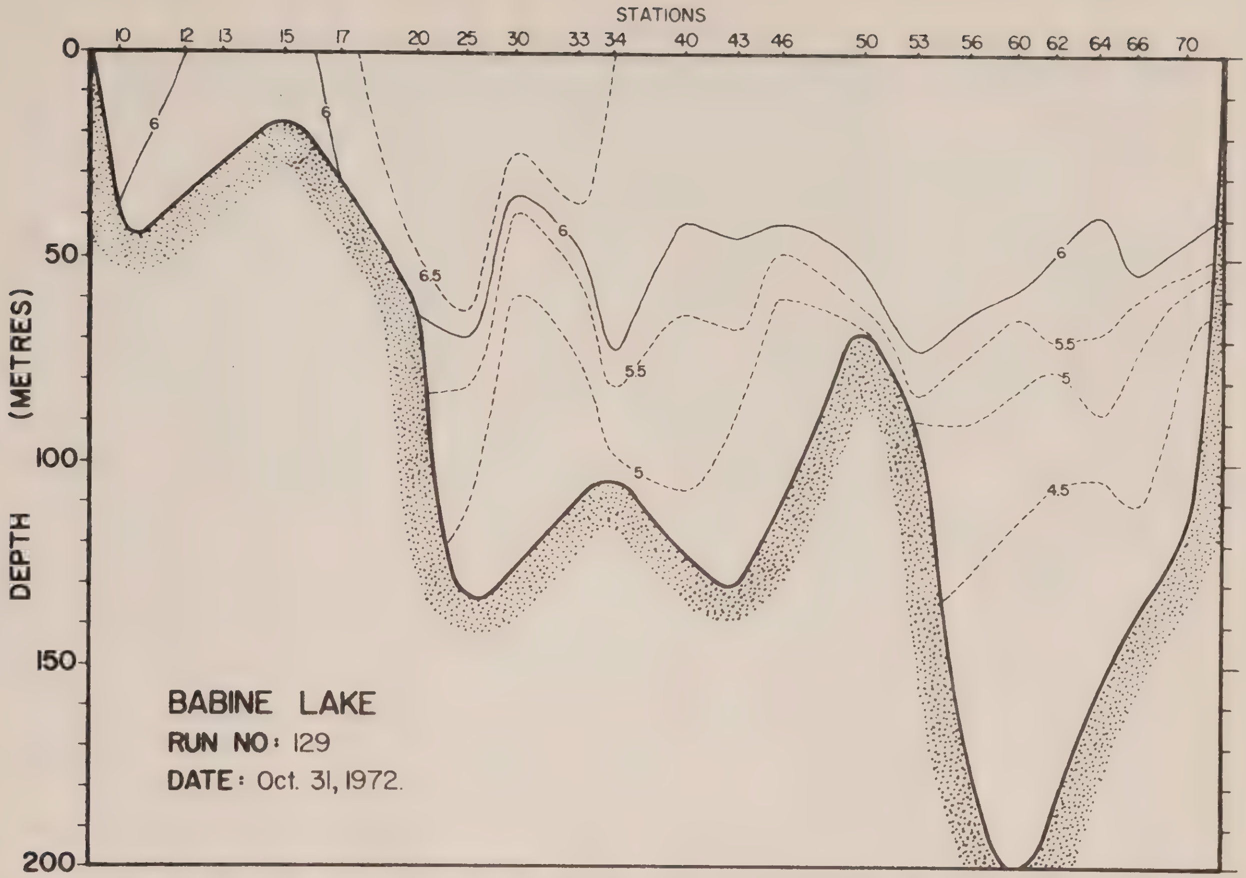

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
8
7
6
5
4.5
BABINE LAKE
RUN NO: 106
DATE: Oct. 10, 1972.

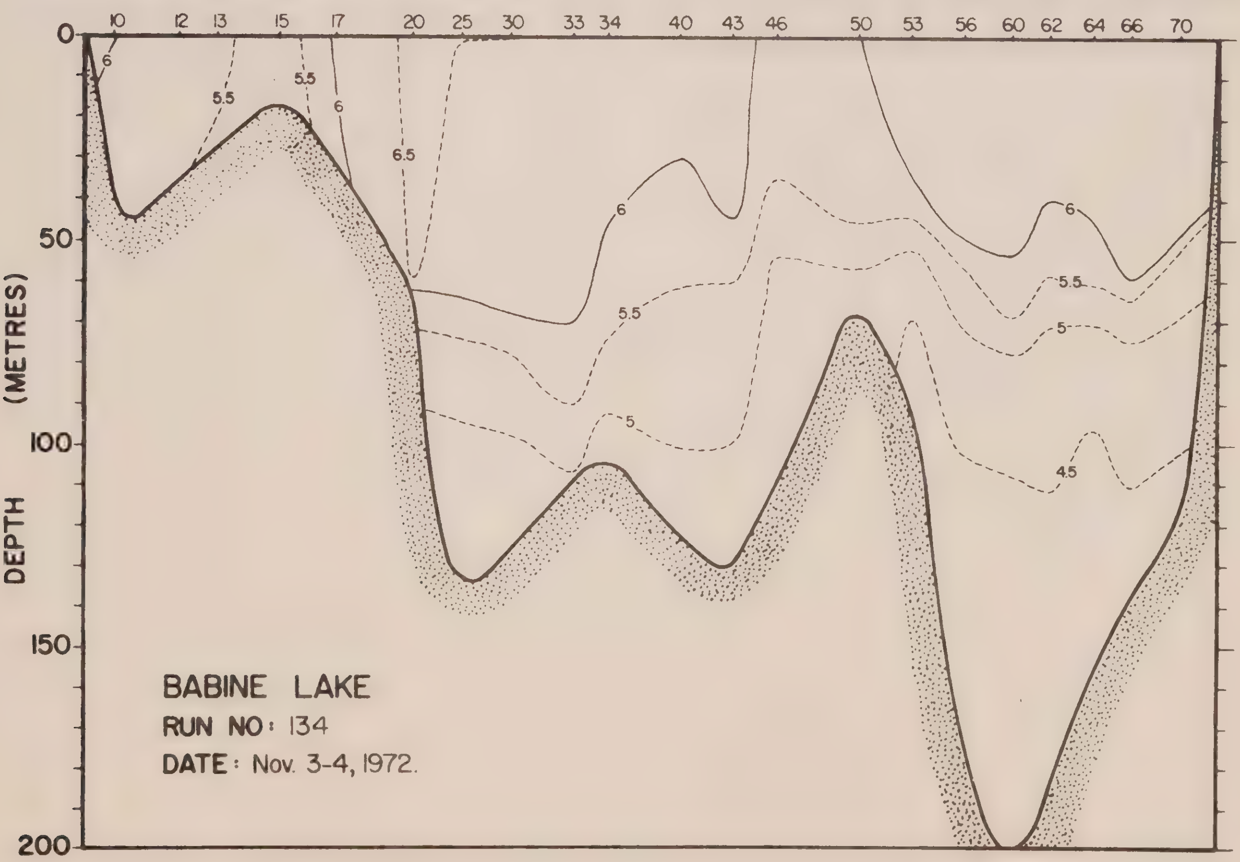

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
50
100
150
200
DEPTH (METRES)
7
6
8
5
4.5
BABINE LAKE
RUN NO: 112
DATE: Oct. 13-14, 1972.

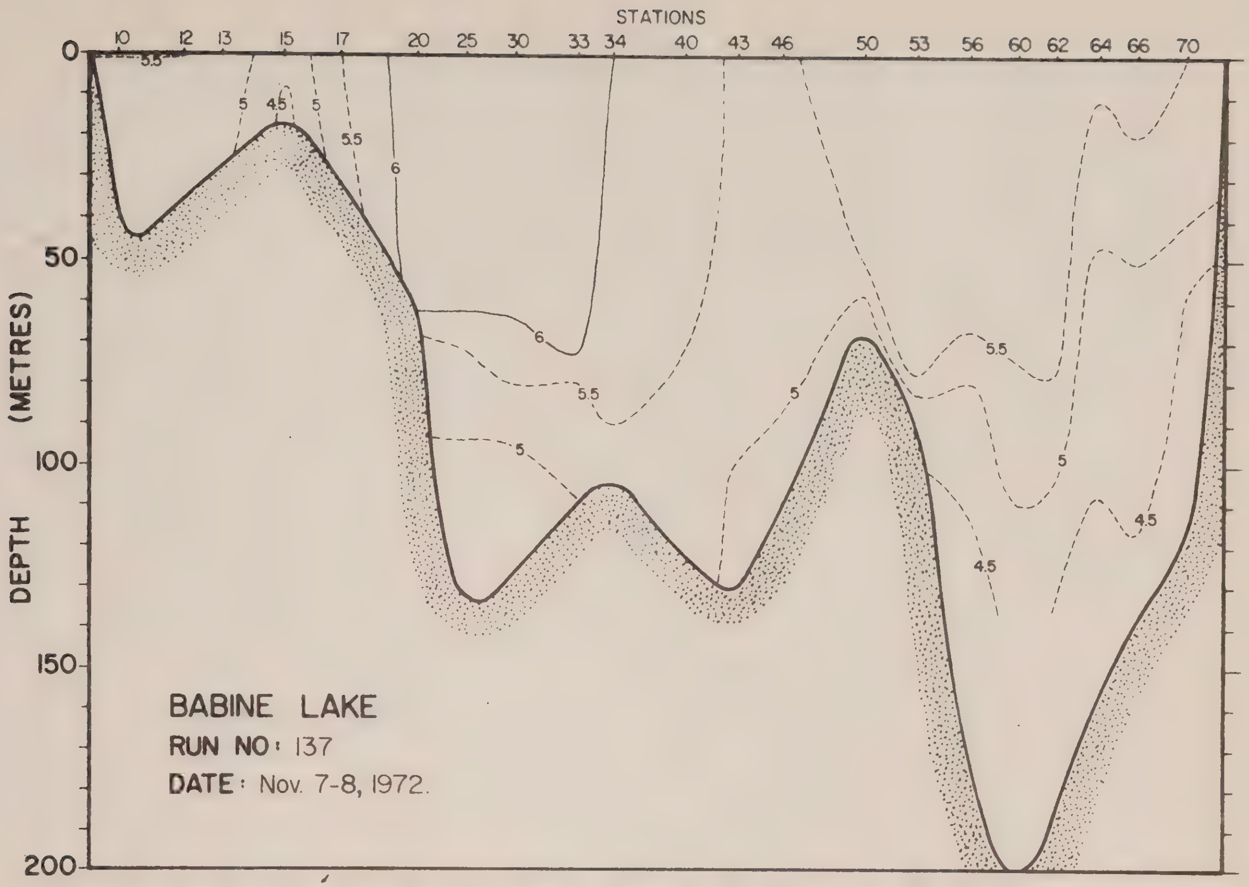

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
50
100
150
200
DEPTH (METRES)
6.5
6
7
7.5
5.5
5
4.5
BABINE LAKE
RUN NO: 118
DATE: Oct. 20, 1972.

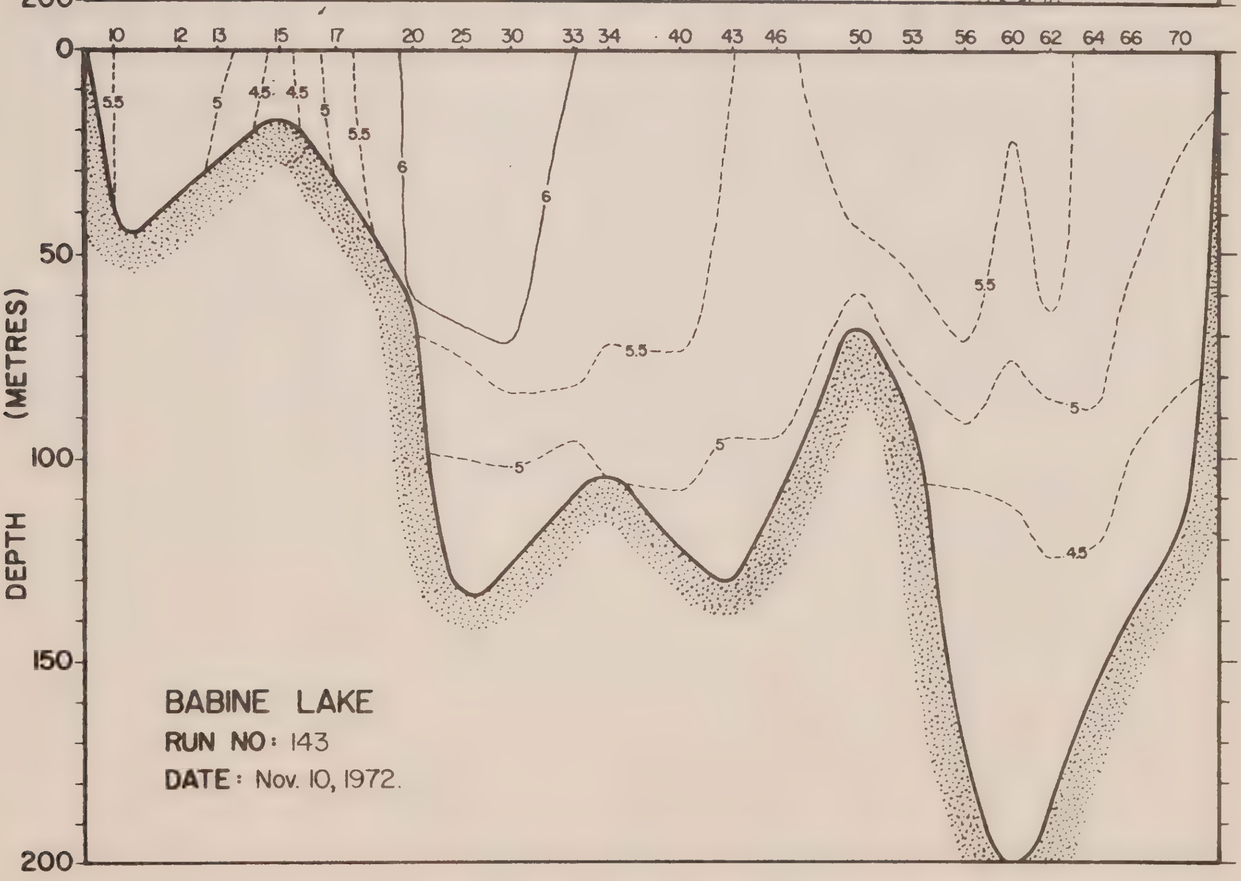

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 122
DATE: Oct. 24-25, 1972.

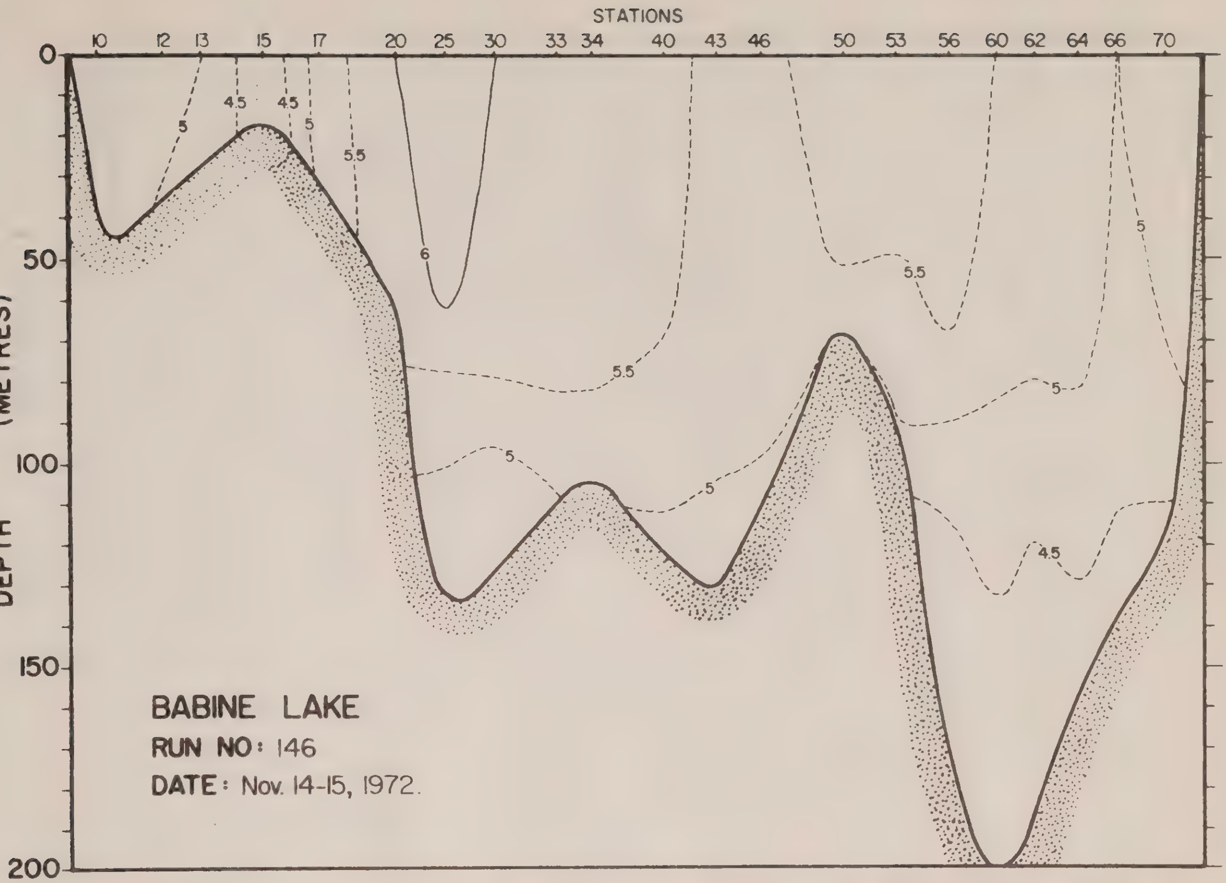

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 127
DATE: Oct. 27, 1972.

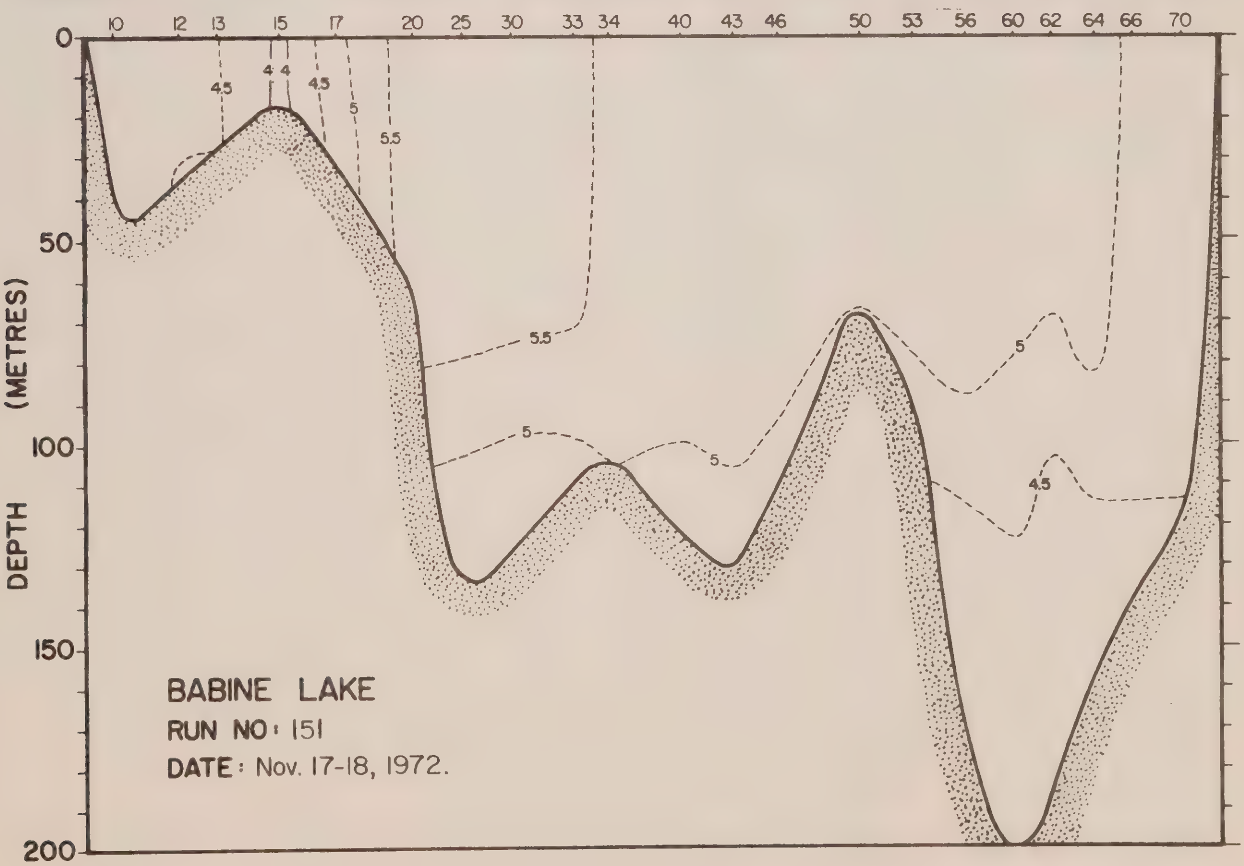

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
50
100
150
200
DEPTH (METRES)
6
6.5
5.5
5
4.5
BABINE LAKE
RUN NO: 129
DATE: Oct. 31, 1972.

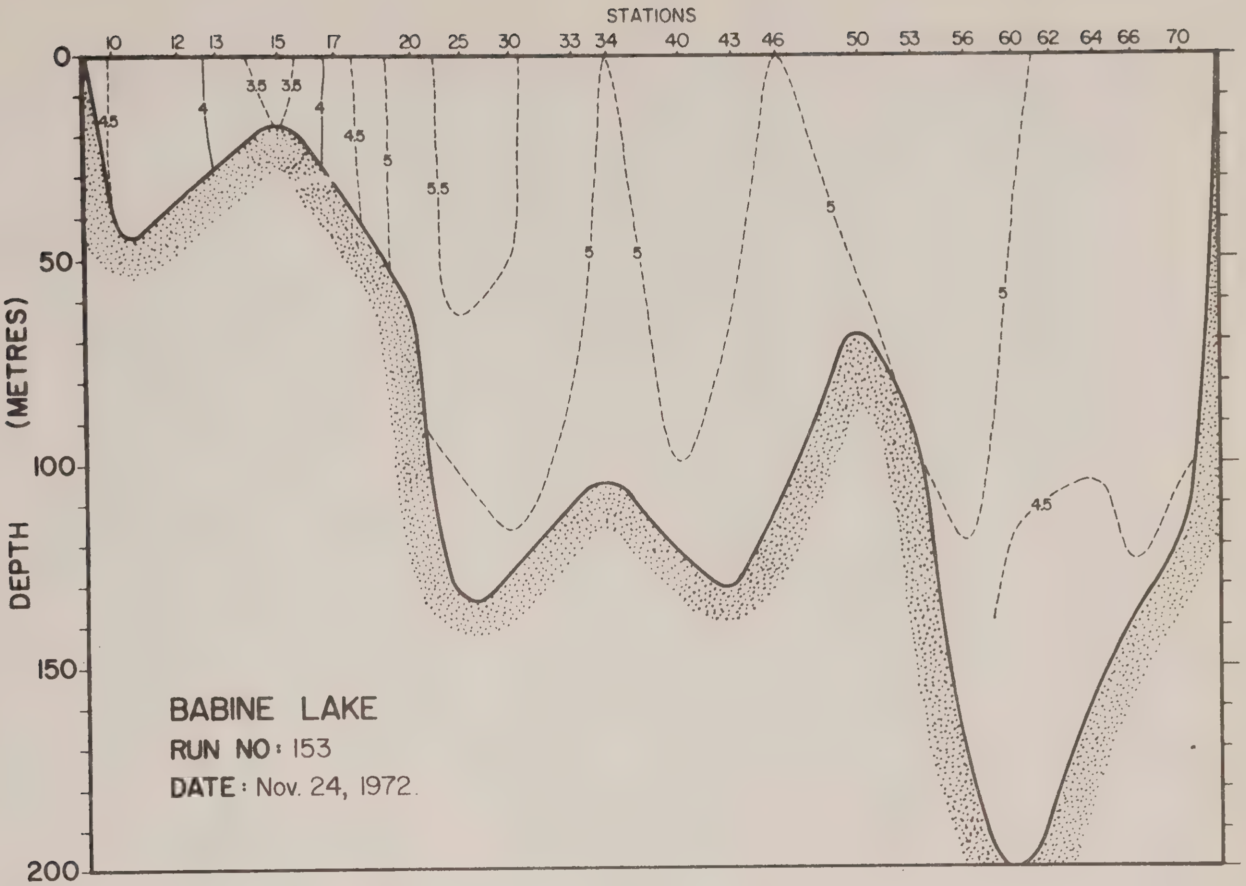

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
50
100
150
200
DEPTH (METRES)
6
5.5
6.5
5
4.5
BABINE LAKE
RUN NO: 134
DATE: Nov. 3-4, 1972.


STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0 50 100 150 200
BABINE LAKE
RUN NO: 137
DATE: Nov. 7-8, 1972.

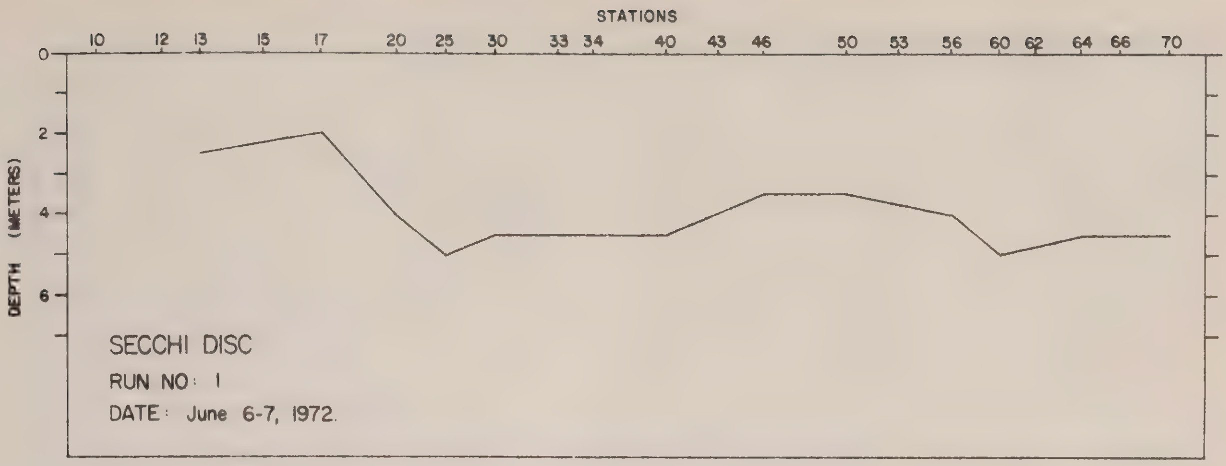

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0 50 100 150 200
BABINE LAKE
RUN NO: 143
DATE: Nov. 10, 1972.

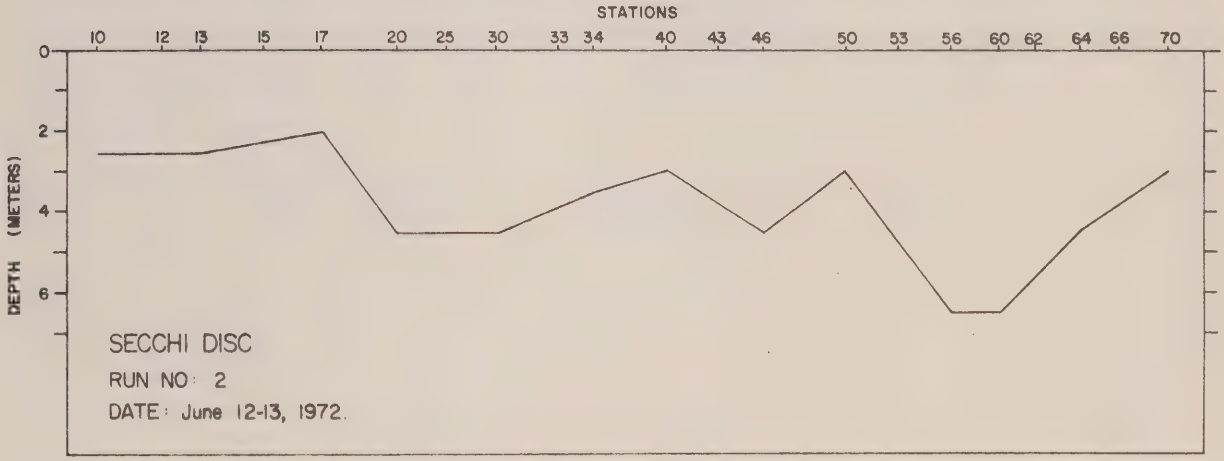

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 146
DATE: Nov. 14-15, 1972.

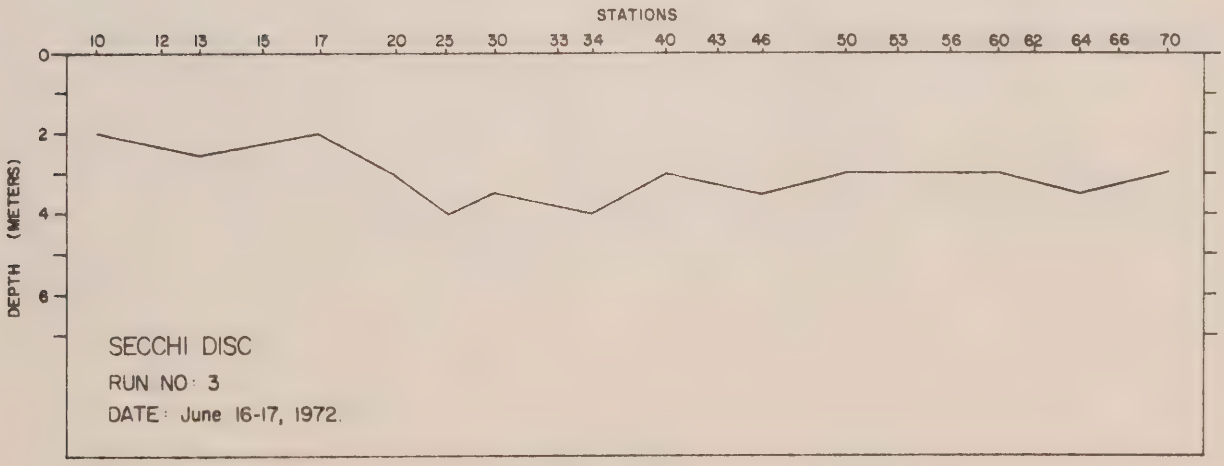

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 151
DATE: Nov. 17-18, 1972.

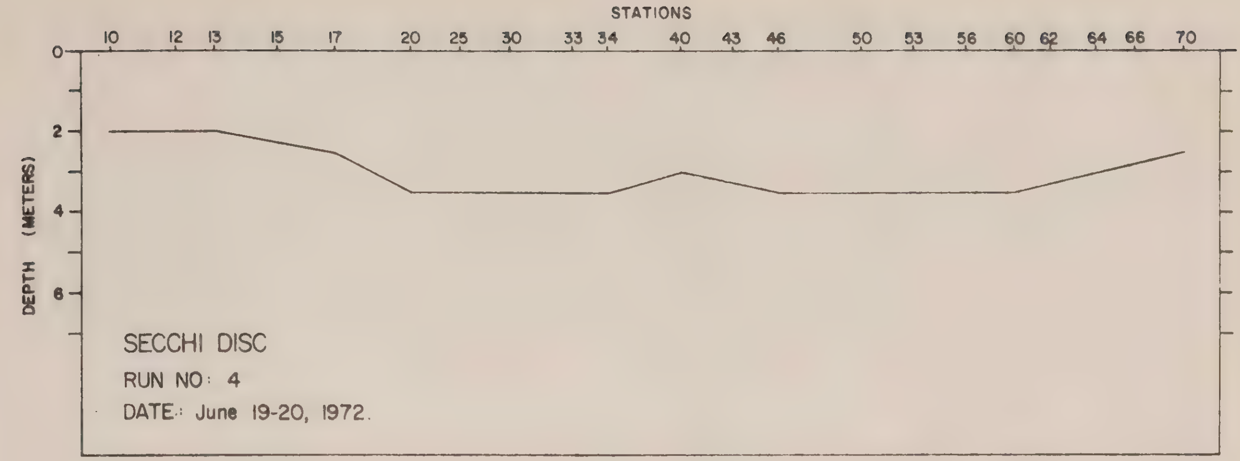

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
3.5 3.5
4 4
4.5
4.5
5
5.5
5
5 5
5
4.5
BABINE LAKE
RUN NO: 153
DATE: Nov. 24, 1972.

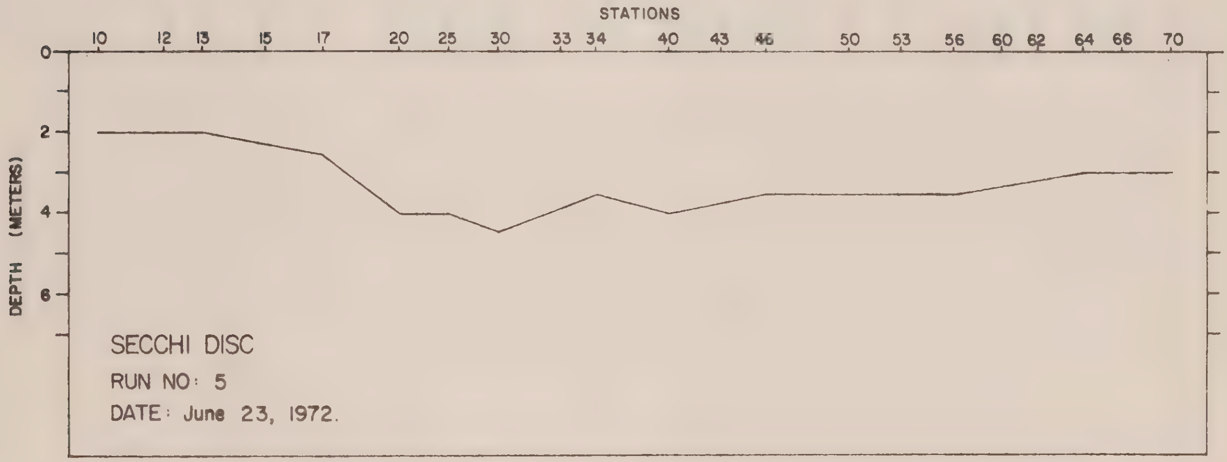
SECCHI DEPTH (JUNE 6 - NOVEMBER 24)

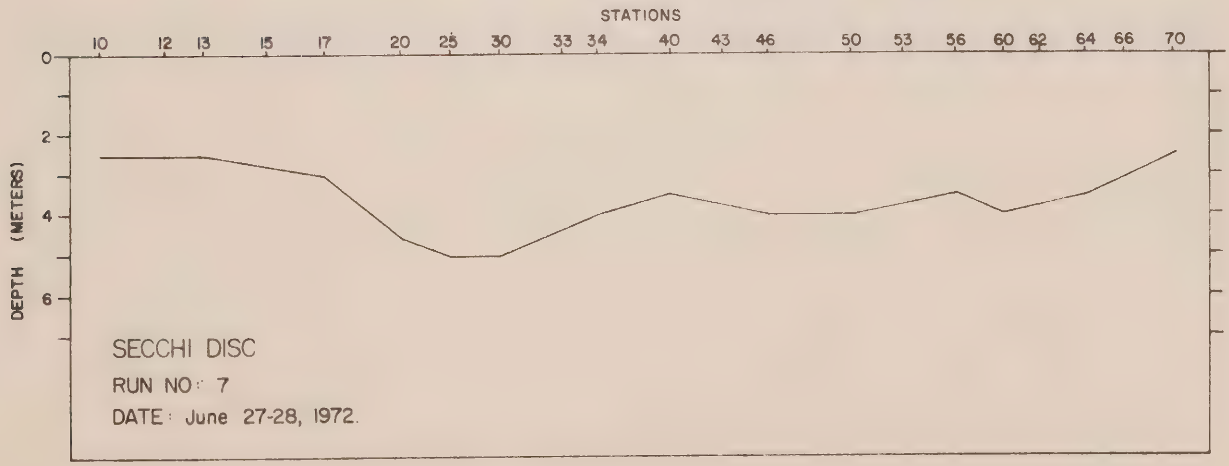

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 1
DATE: June 6-7, 1972.

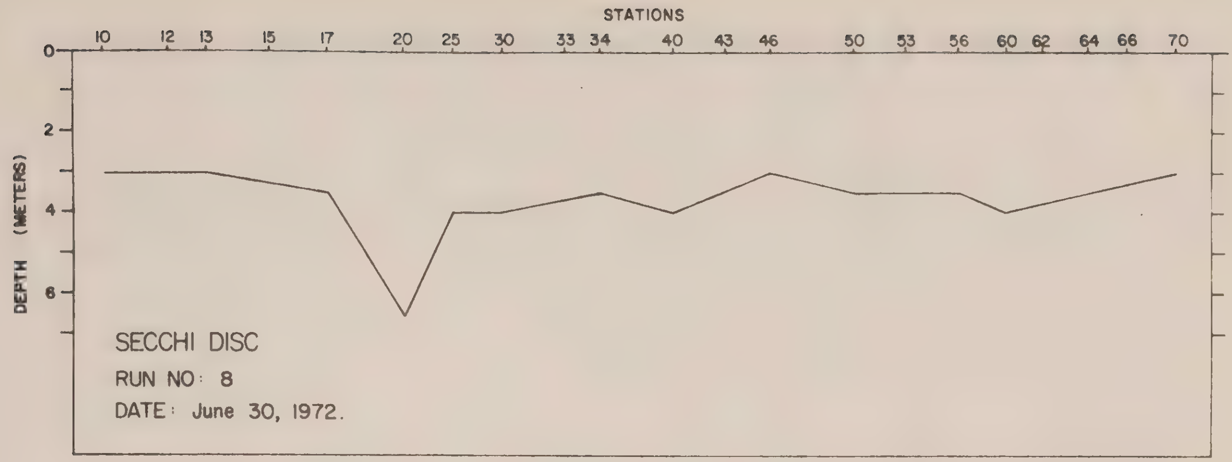

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 2
DATE: June 12-13, 1972.

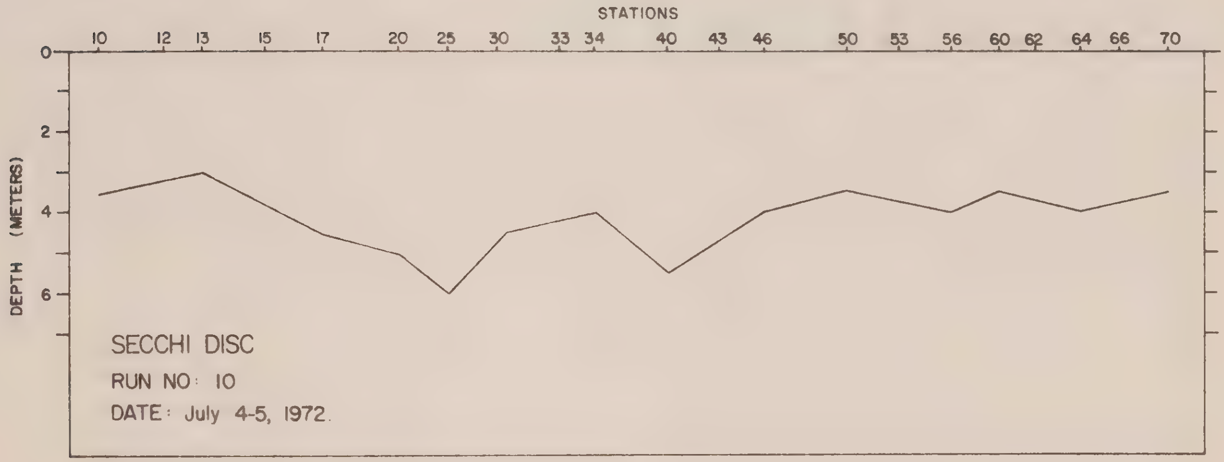

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 3
DATE: June 16-17, 1972.

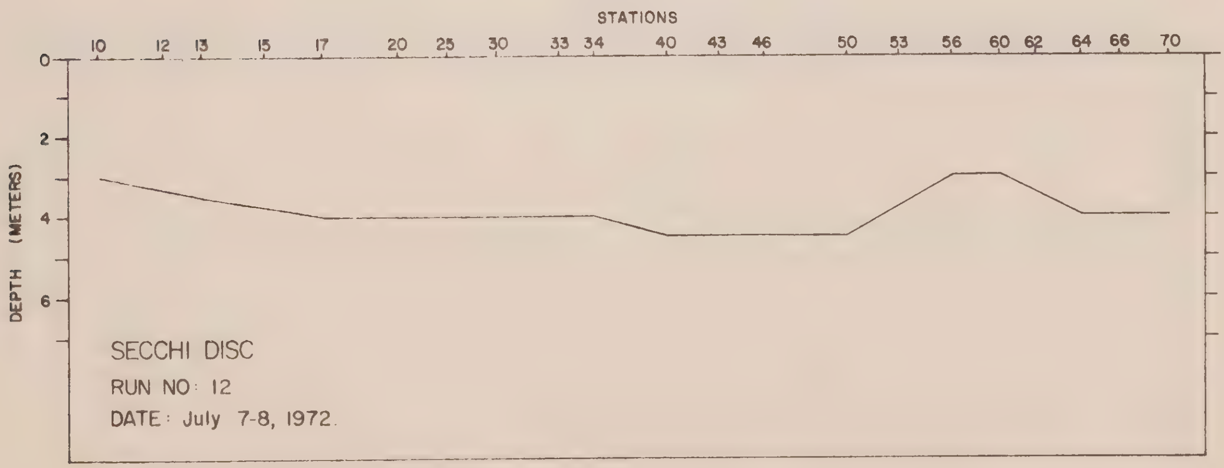

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 4
DATE: June 19-20, 1972.

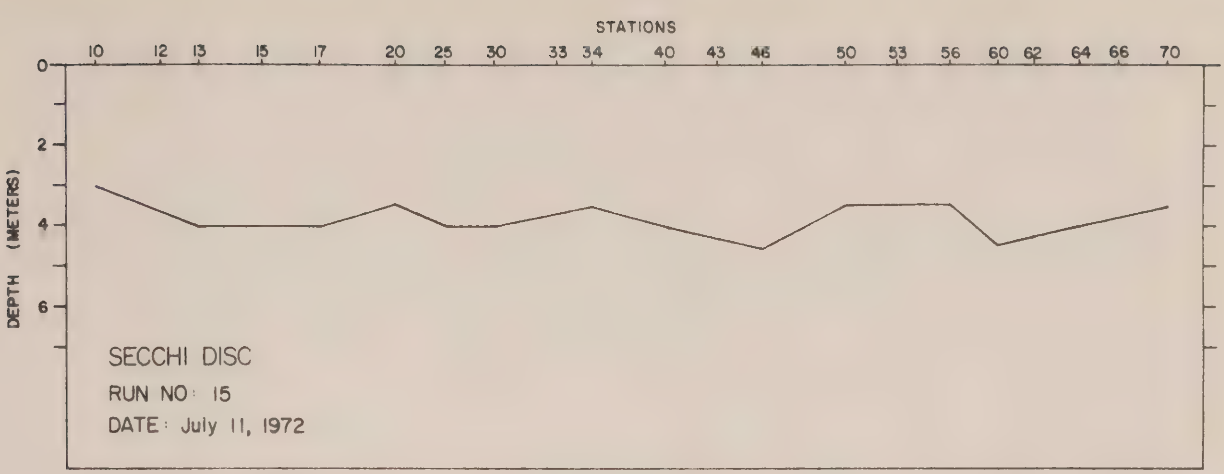

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 5
DATE: June 23, 1972.

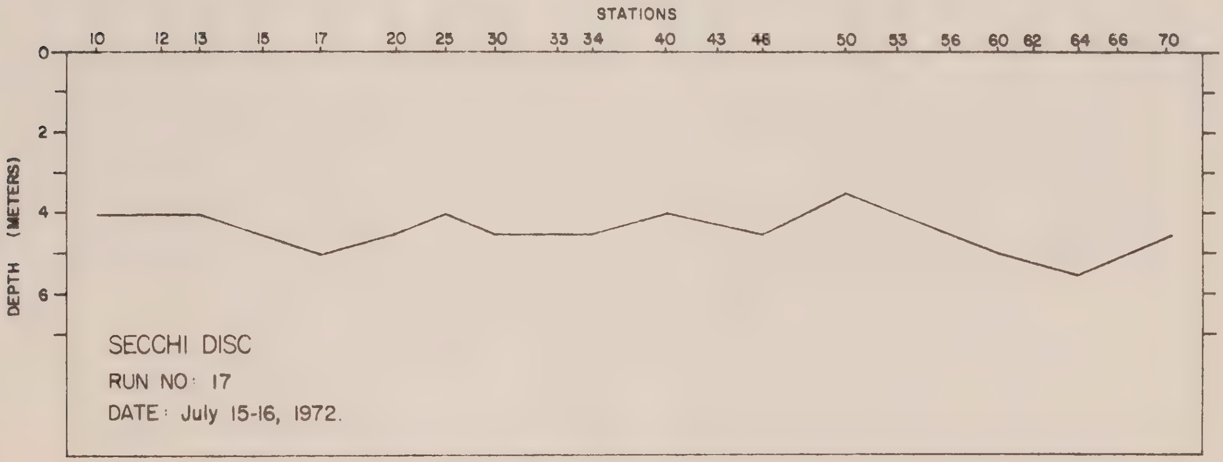

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 7
DATE: June 27-28, 1972.

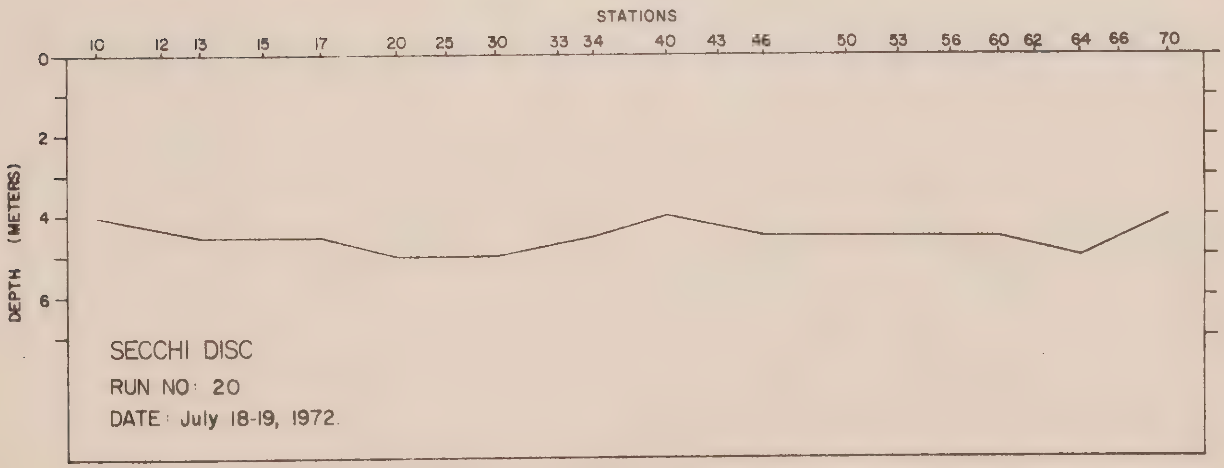

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 8
DATE: June 30, 1972.

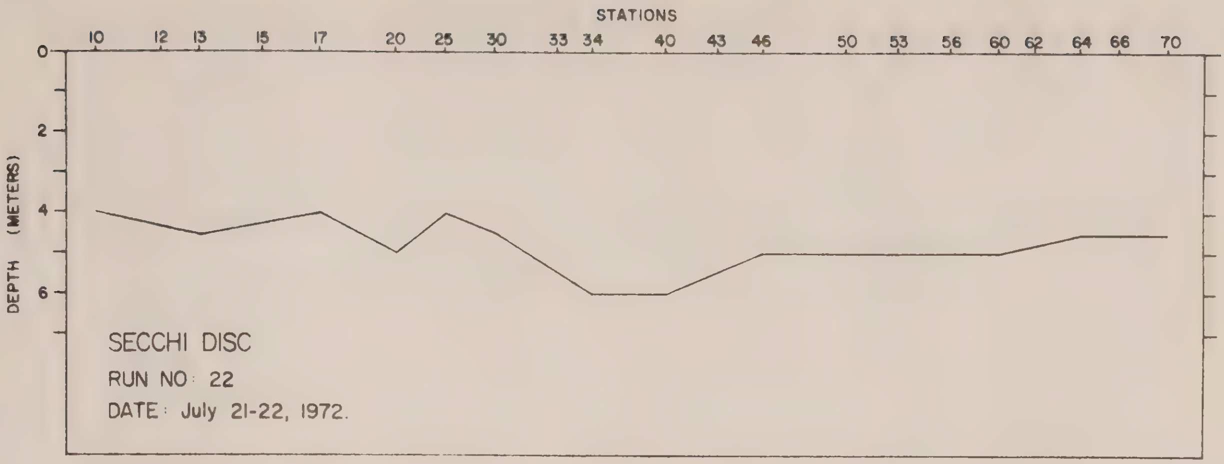

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 10
DATE: July 4-5, 1972.

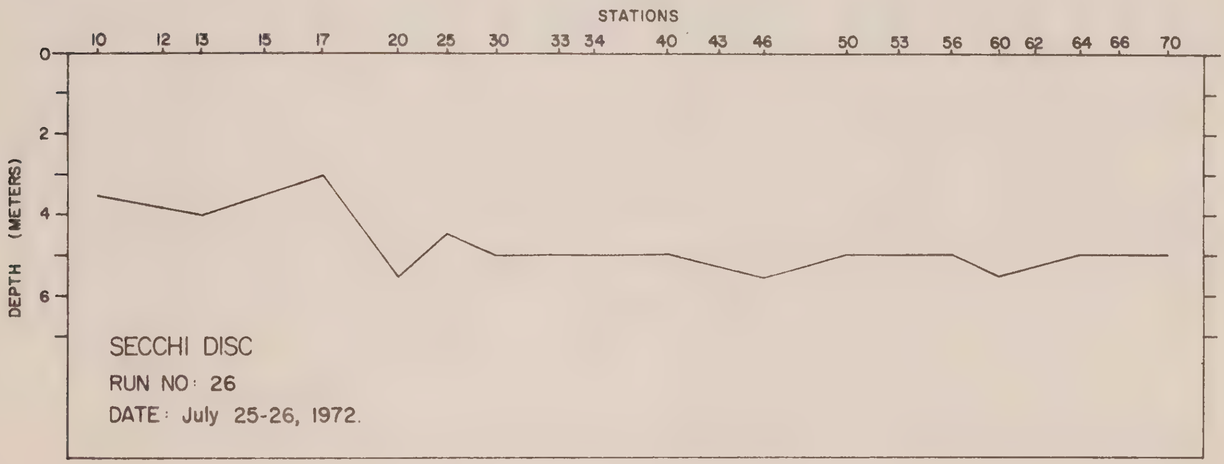

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 12
DATE: July 7-8, 1972.

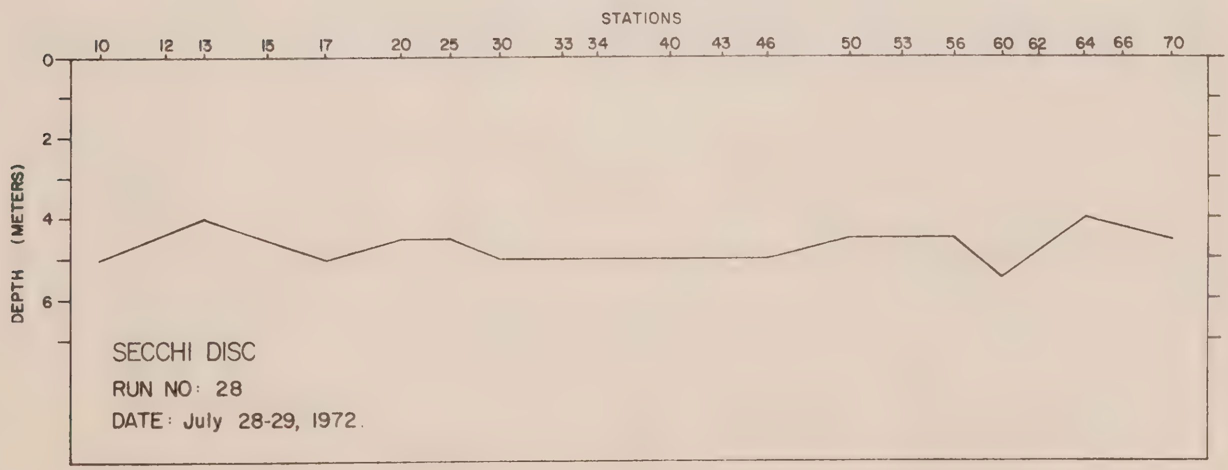

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 15
DATE: July 11, 1972

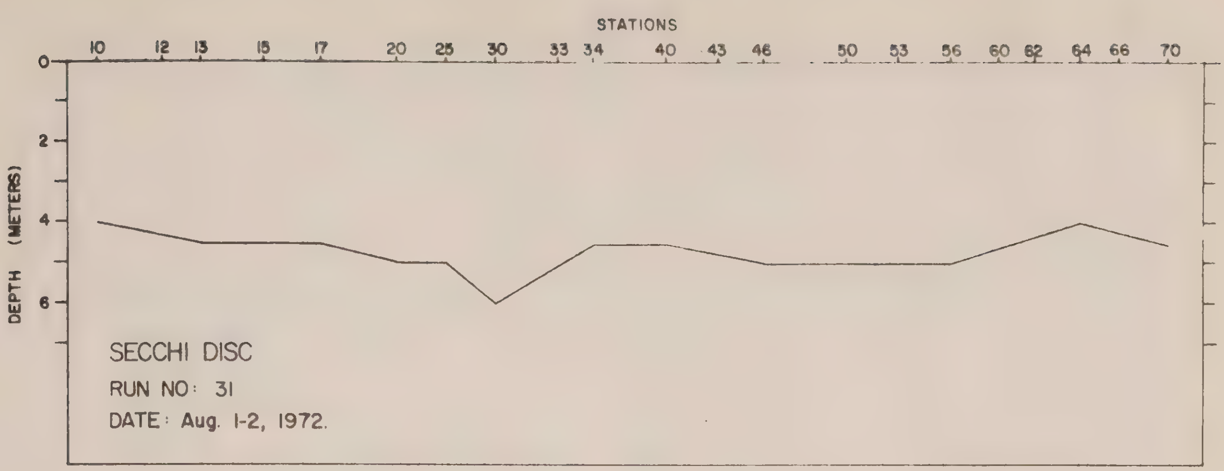

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 17
DATE: July 15-16, 1972.

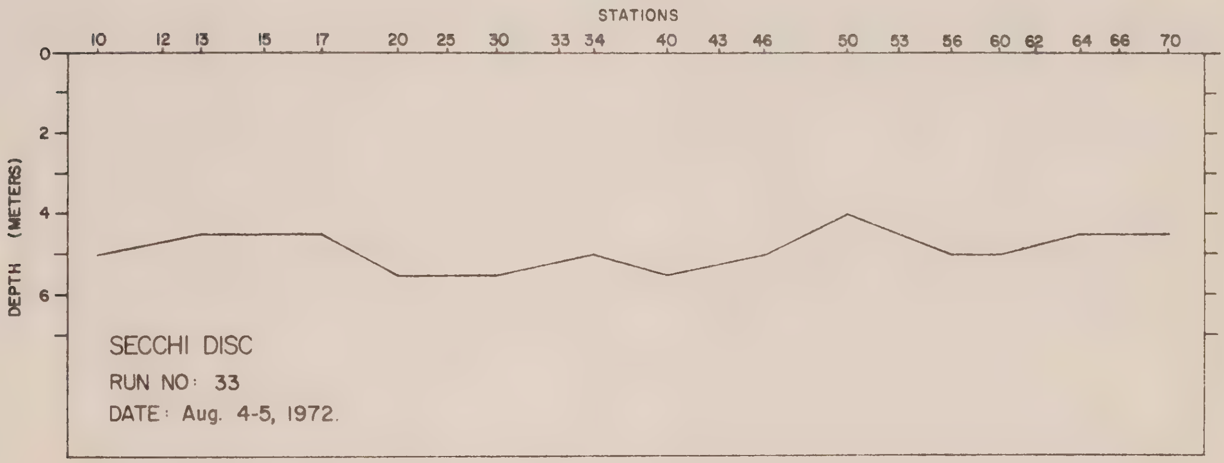

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 20
DATE: July 18-19, 1972.

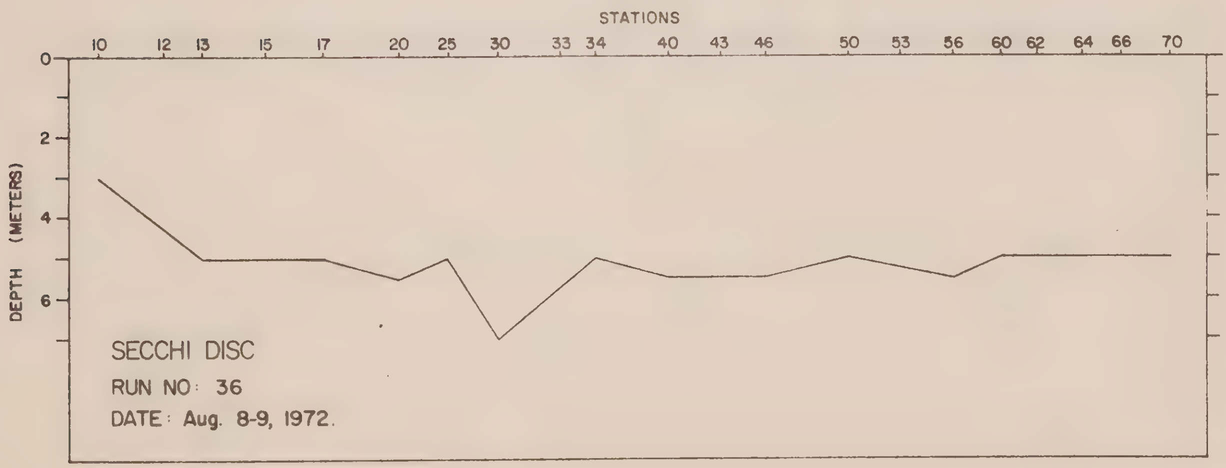

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 22
DATE: July 21-22, 1972.

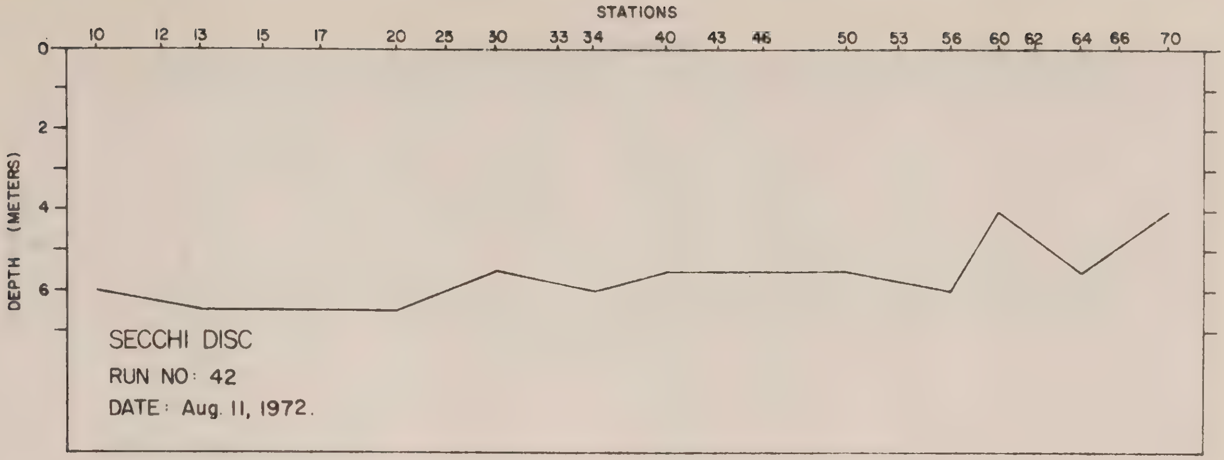

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 26
DATE: July 25-26, 1972.

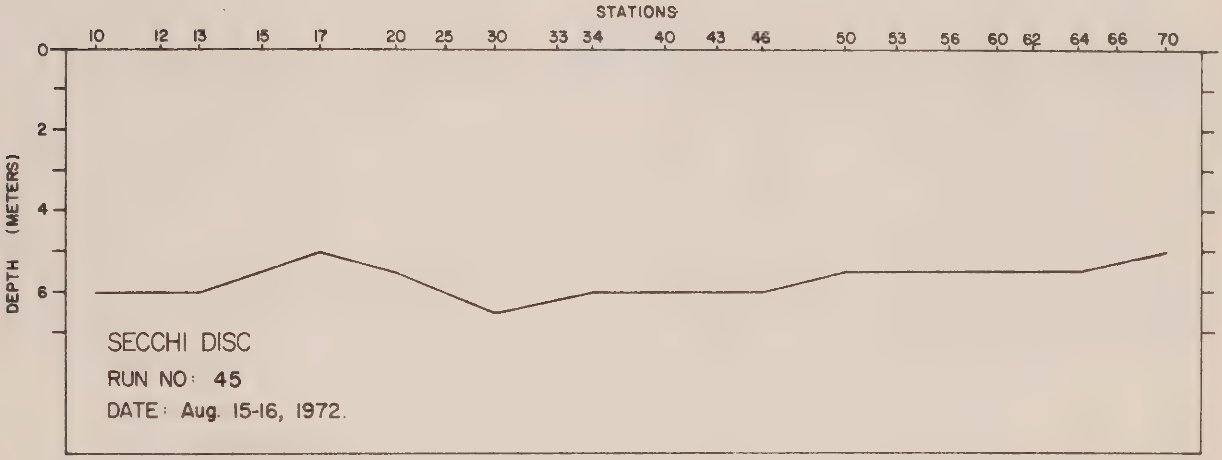

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 28
DATE: July 28-29, 1972.

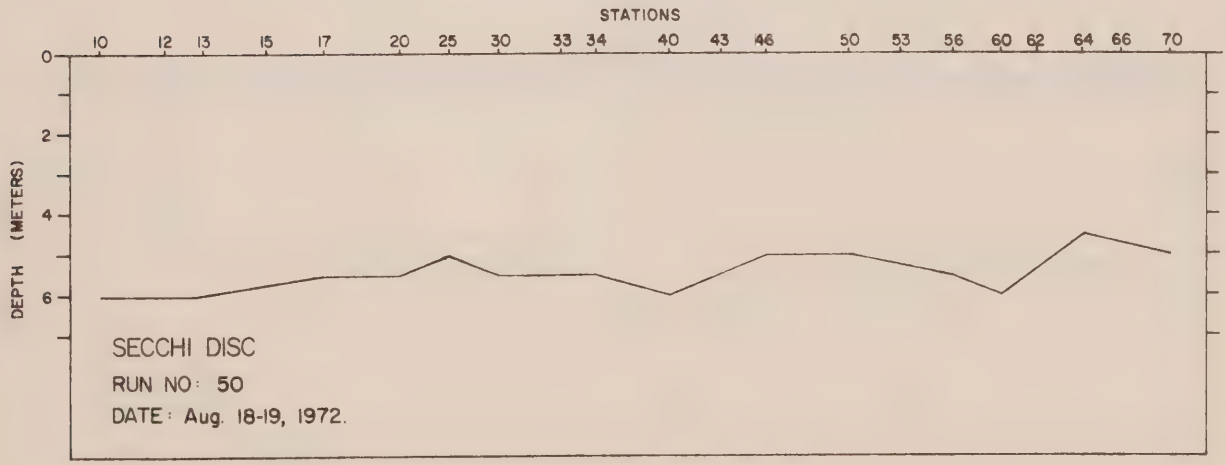

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 31
DATE: Aug. 1-2, 1972.

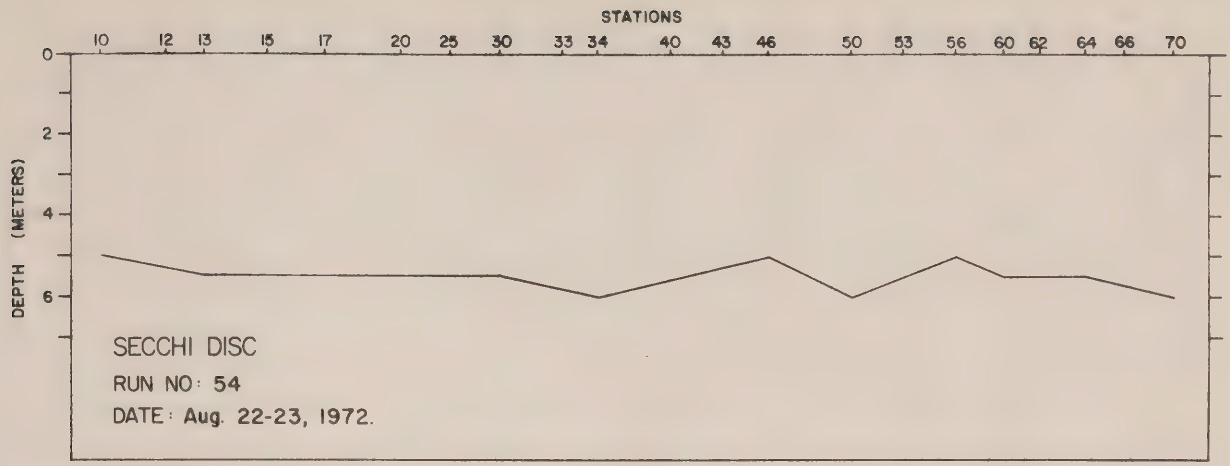

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 33
DATE: Aug. 4-5, 1972.

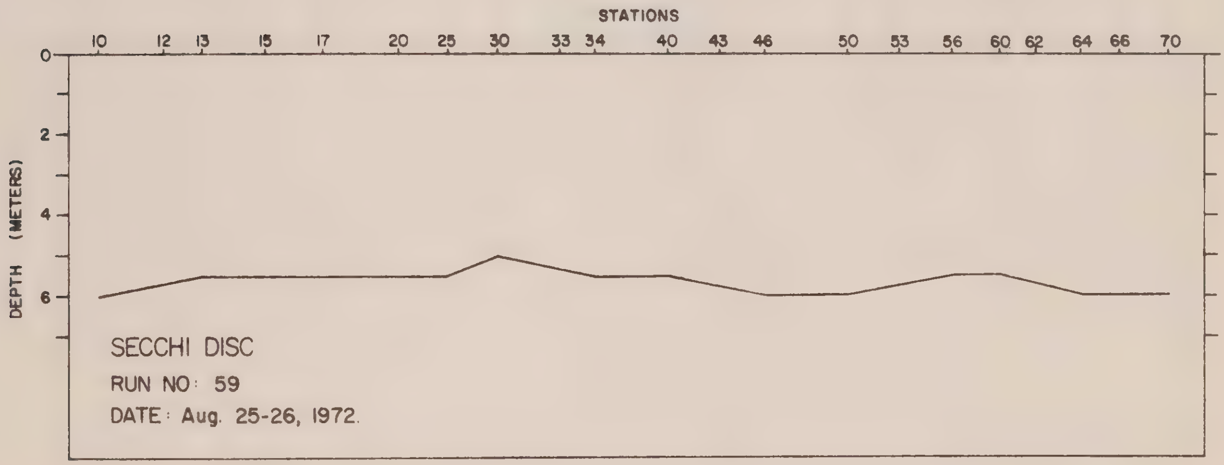

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 36
DATE: Aug. 8-9, 1972.

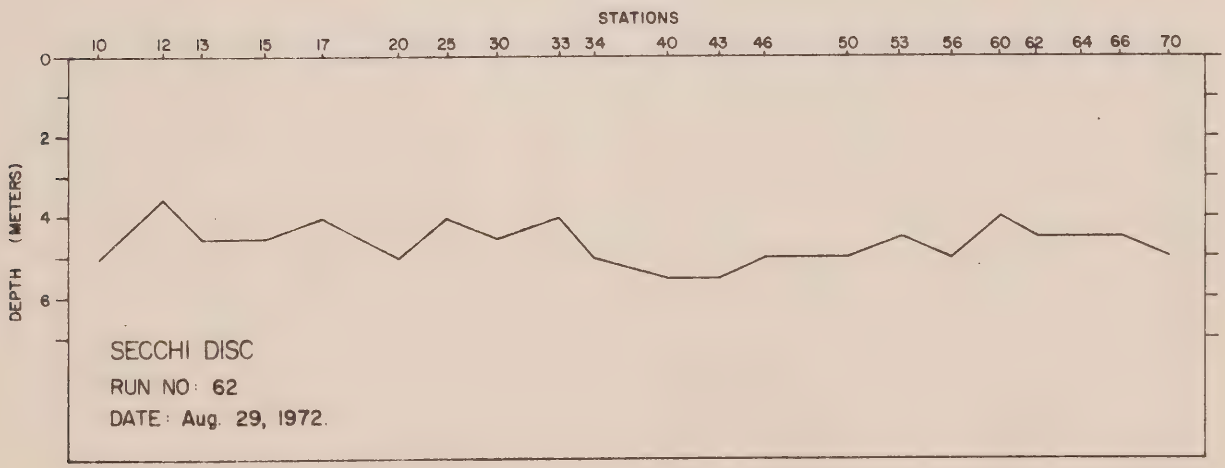

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 42
DATE: Aug. 11, 1972.

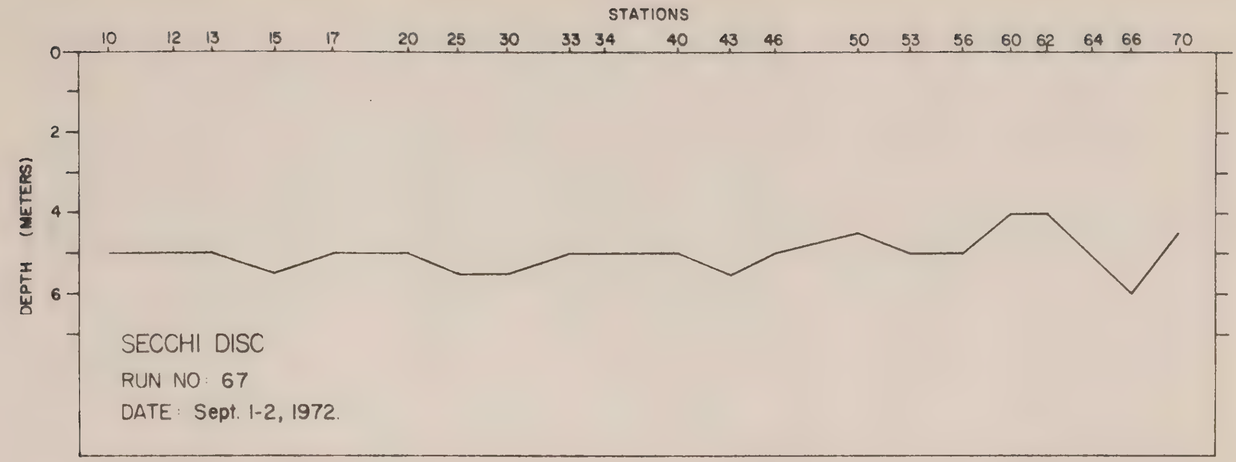

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 45
DATE: Aug. 15-16, 1972.

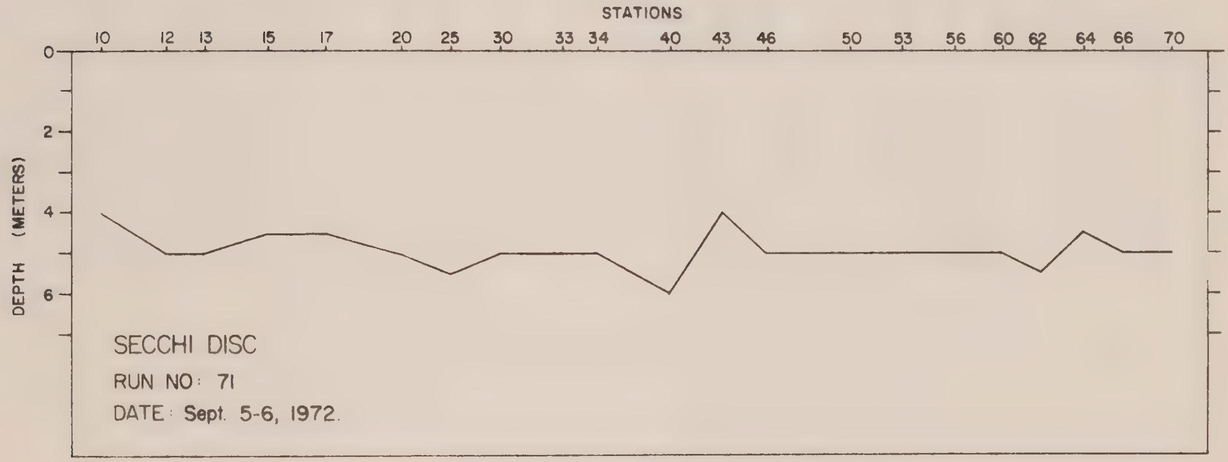

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 50
DATE: Aug. 18-19, 1972.

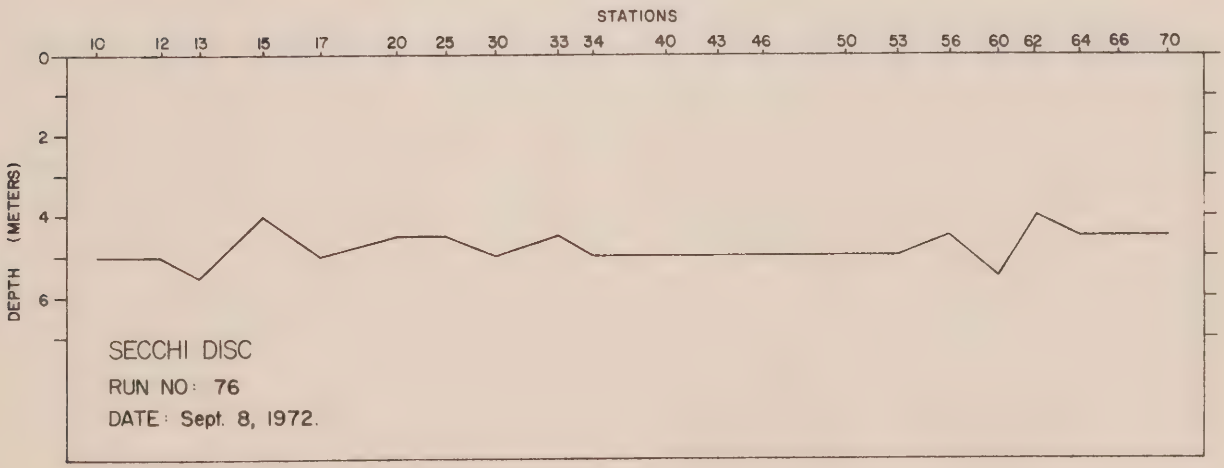

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 54
DATE: Aug. 22-23, 1972.

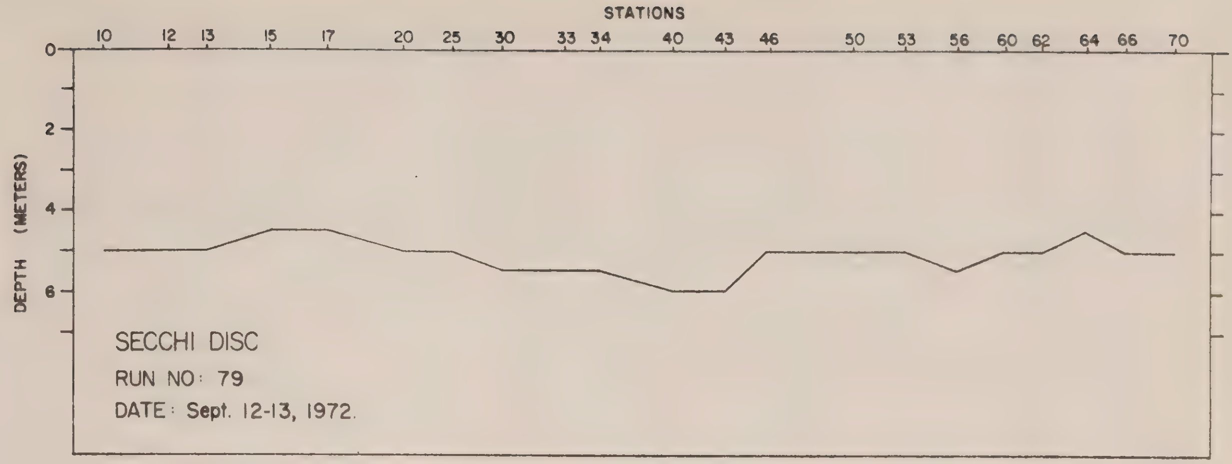

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 59
DATE: Aug. 25-26, 1972.

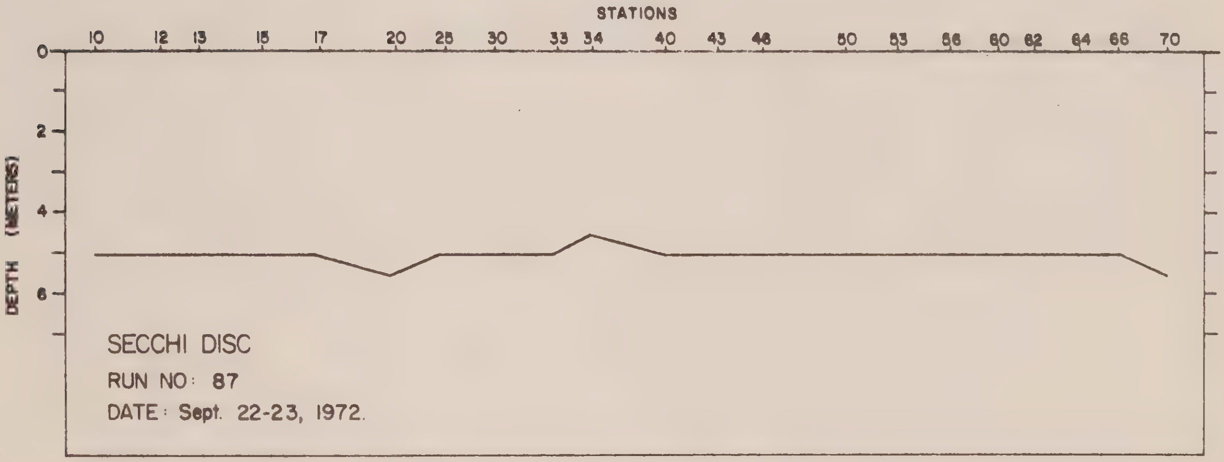

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 62
DATE: Aug. 29, 1972.

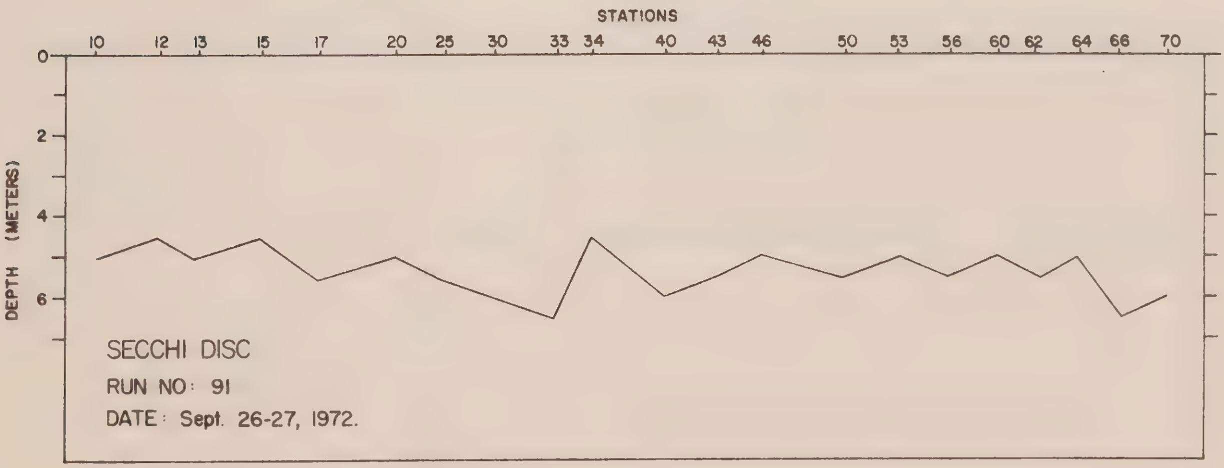

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METERS)
0 2 4 6
SECCHI DISC
RUN NO: 67
DATE: Sept. 1-2, 1972.

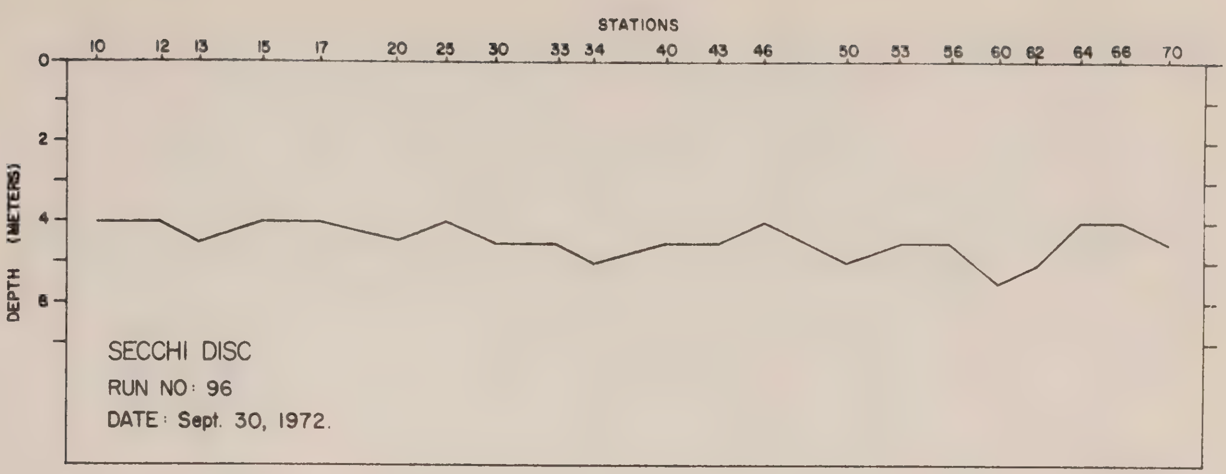

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METERS)
0 2 4 6
SECCHI DISC
RUN NO: 71
DATE: Sept. 5-6, 1972.

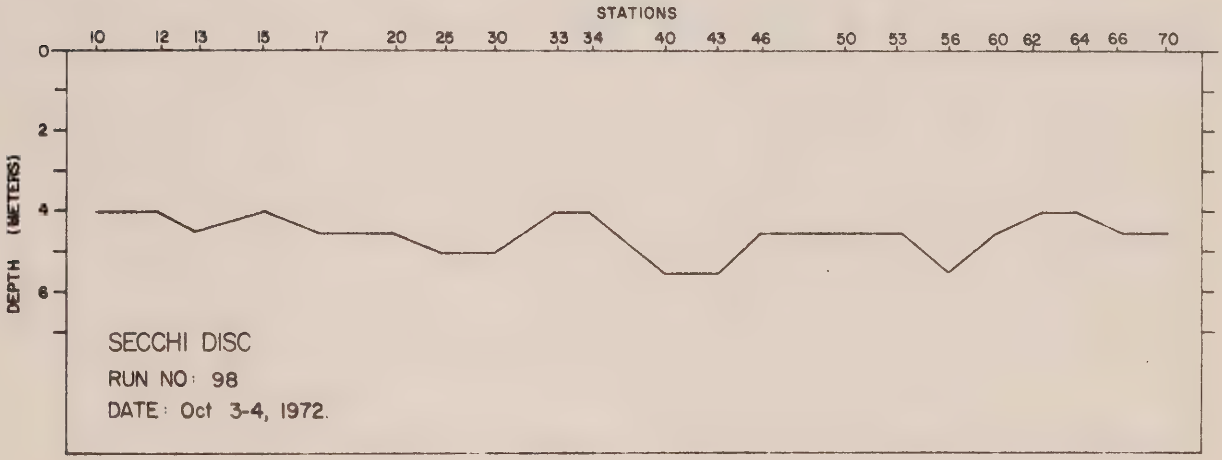

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METERS)
0 2 4 6
SECCHI DISC
RUN NO: 76
DATE: Sept. 8, 1972.

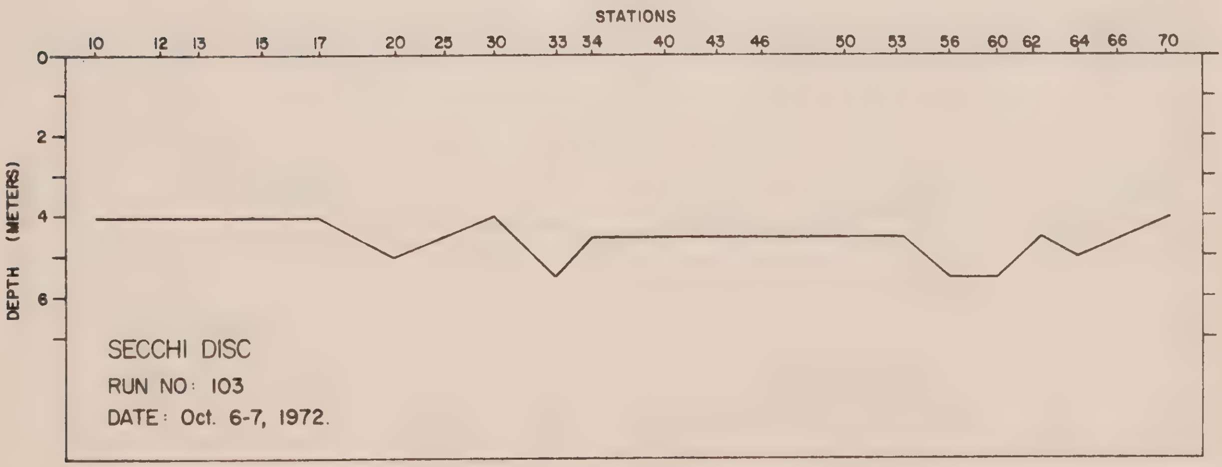

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 79
DATE: Sept. 12-13, 1972.

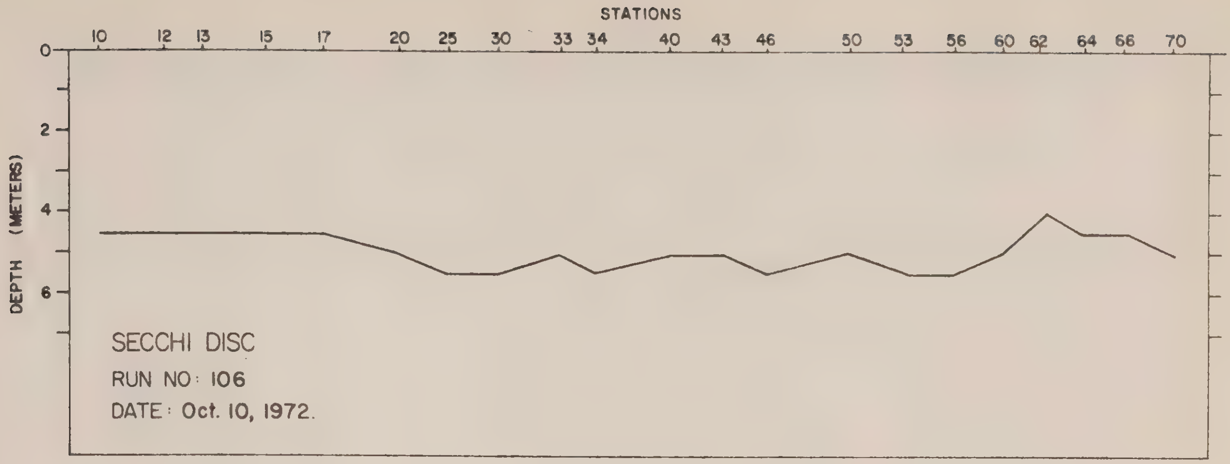

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 87
DATE: Sept. 22-23, 1972.

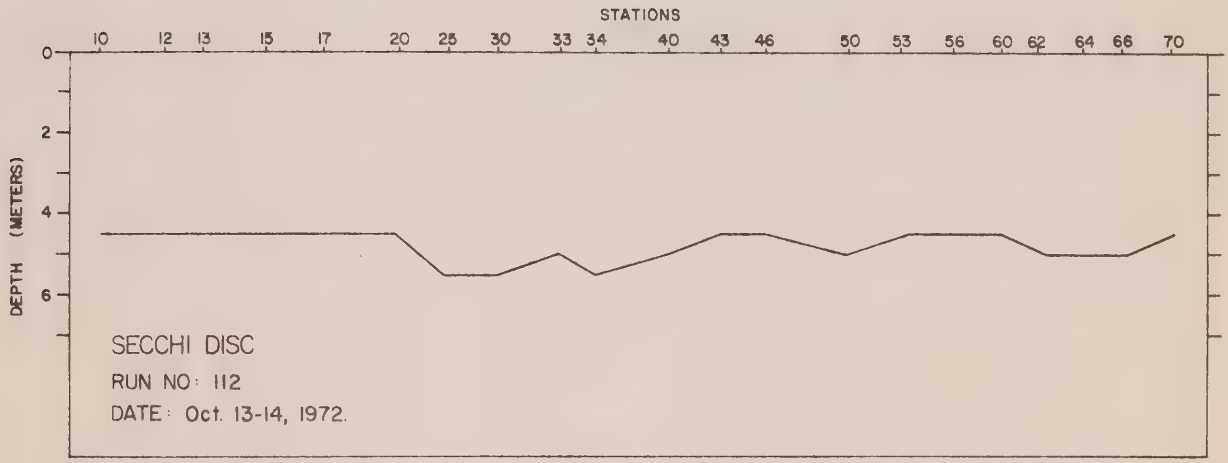

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 91
DATE: Sept. 26-27, 1972.

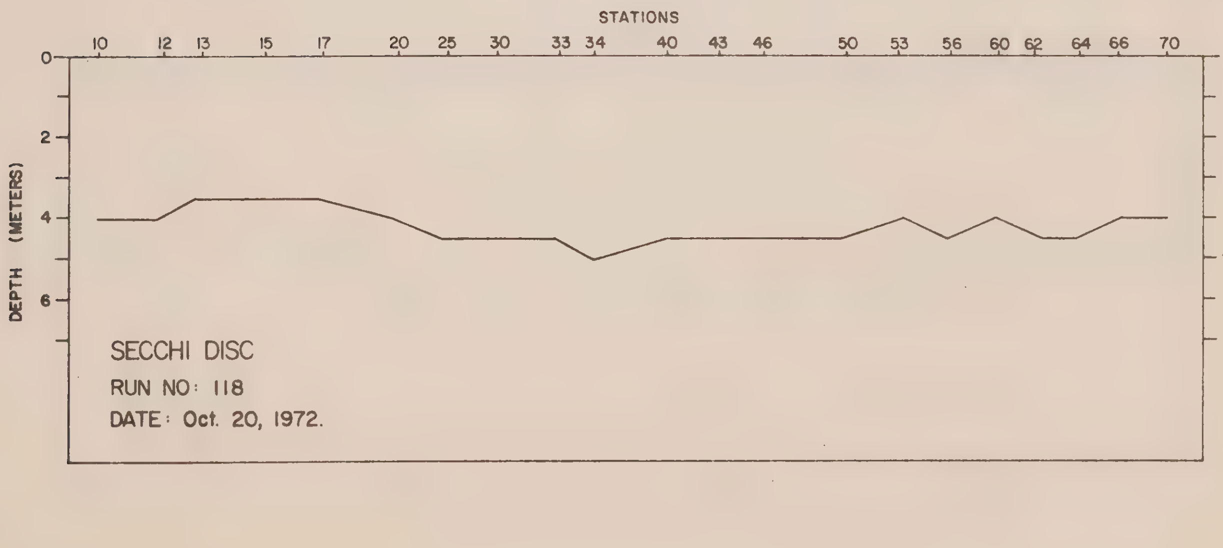

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 96
DATE: Sept. 30, 1972.

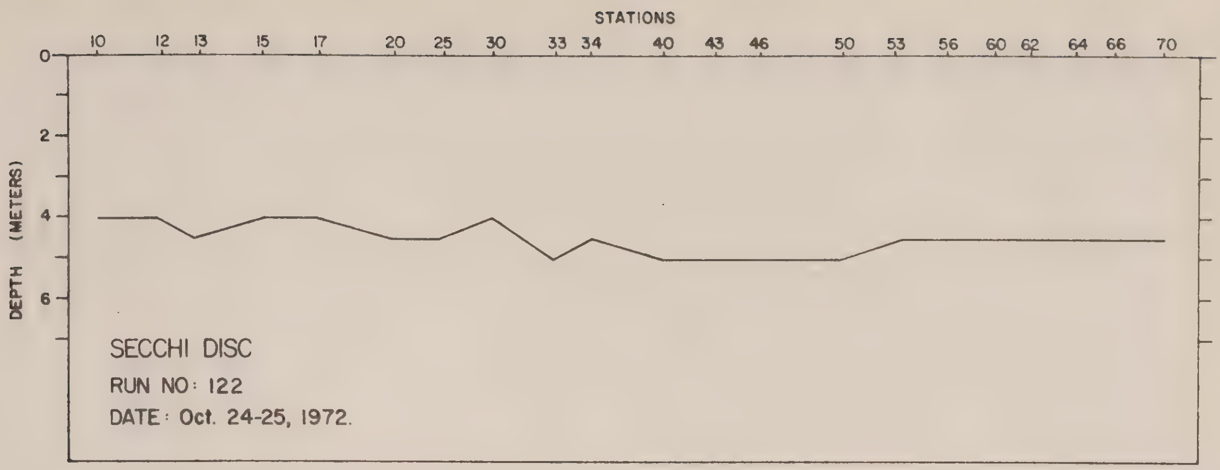

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 98
DATE: Oct 3-4, 1972.

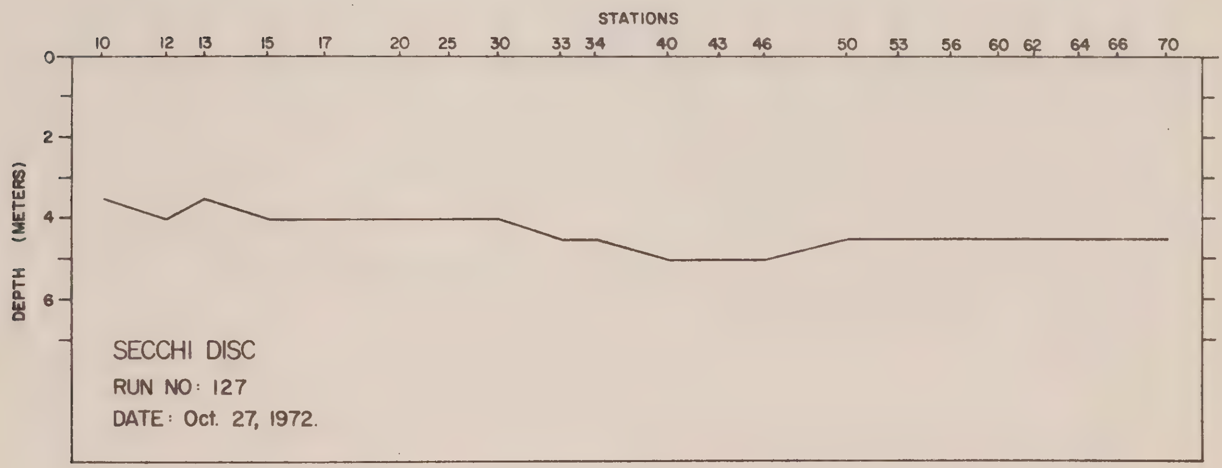

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 103
DATE: Oct. 6-7, 1972.

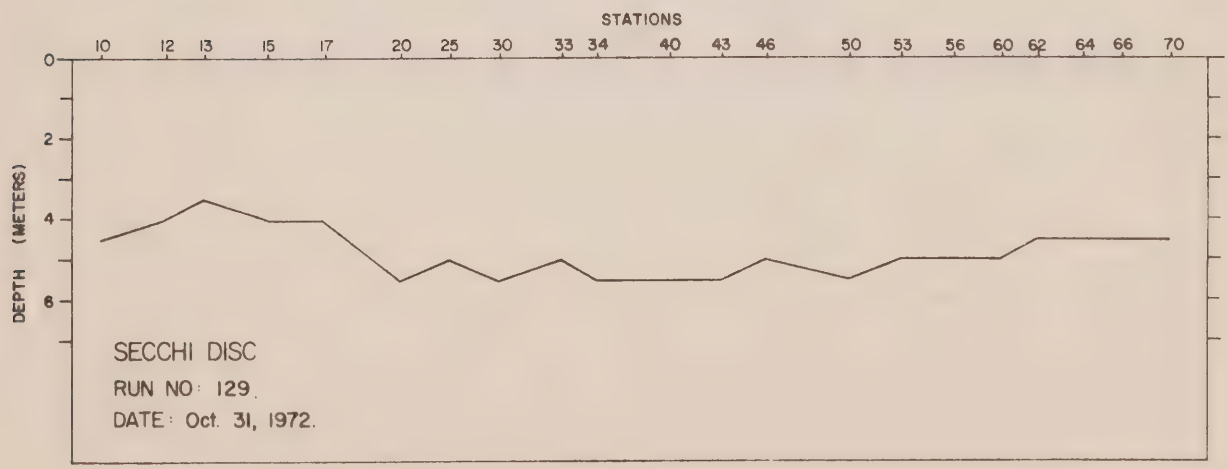

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 106
DATE: Oct. 10, 1972.

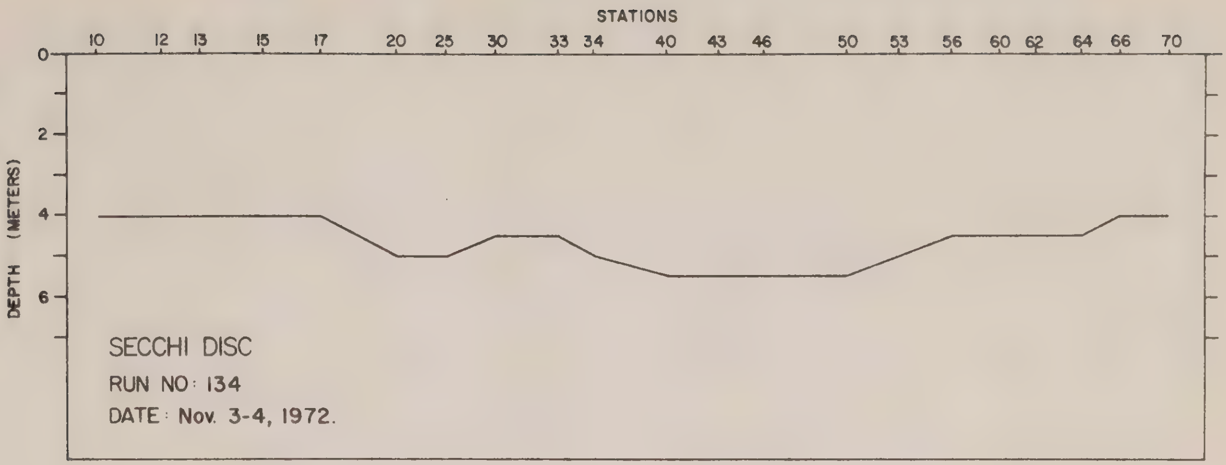

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 112
DATE: Oct. 13-14, 1972.

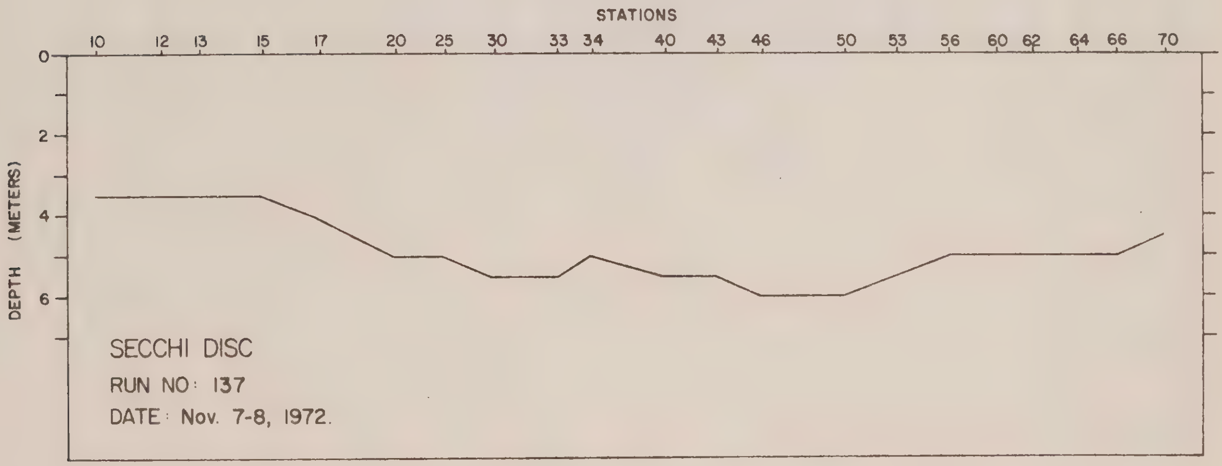

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 118
DATE: Oct. 20, 1972.

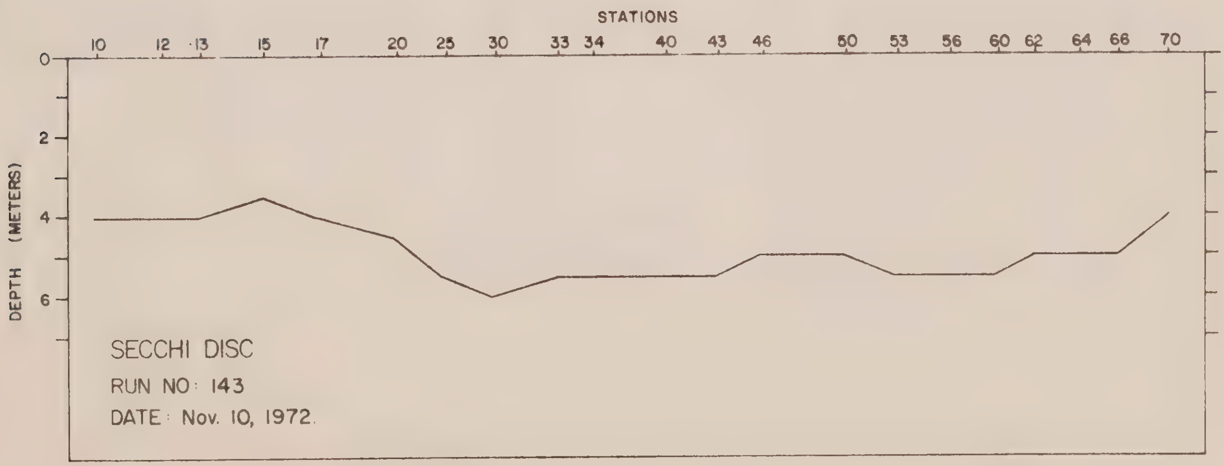

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METERS)
0 2 4 6
SECCHI DISC
RUN NO: 122
DATE: Oct. 24-25, 1972.

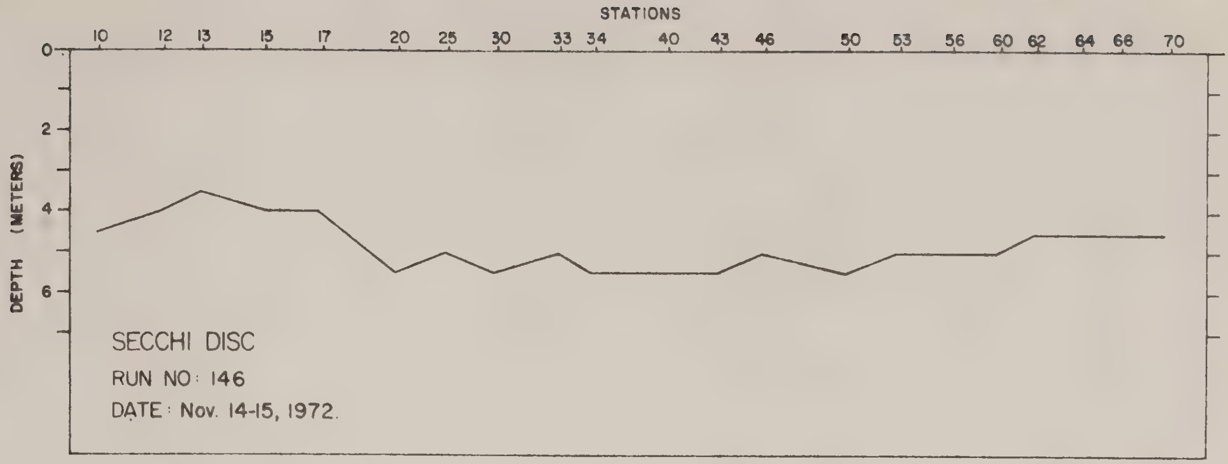

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METERS)
0 2 4 6
SECCHI DISC
RUN NO: 127
DATE: Oct. 27, 1972.

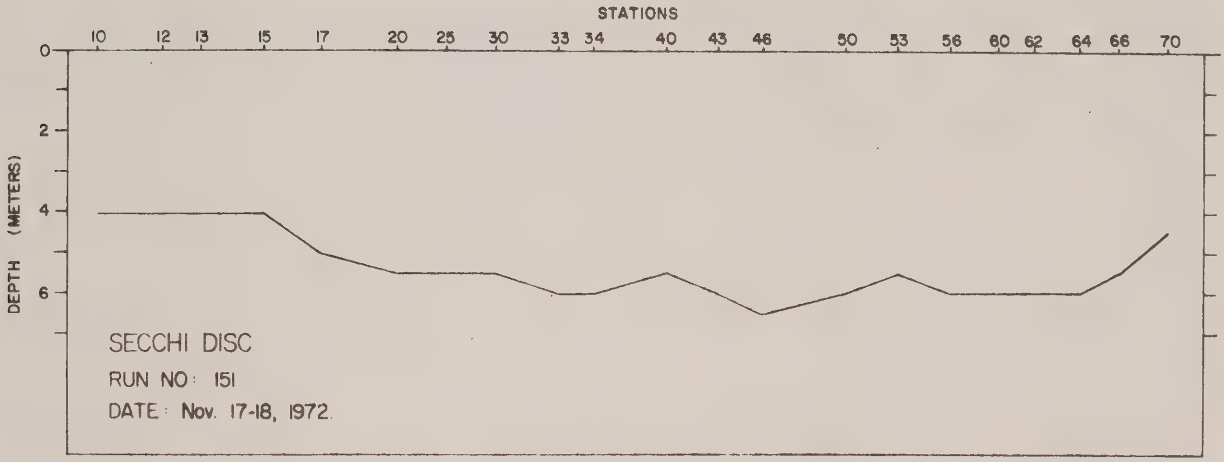

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METERS)
0 2 4 6
SECCHI DISC
RUN NO: 129
DATE: Oct. 31, 1972.

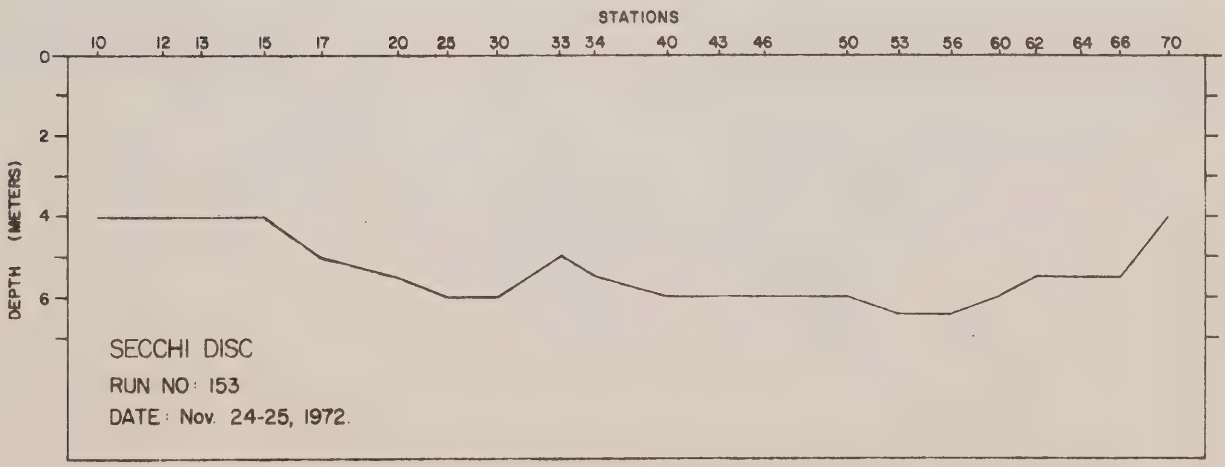

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 134
DATE: Nov. 3-4, 1972.


STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 137
DATE: Nov. 7-8, 1972.

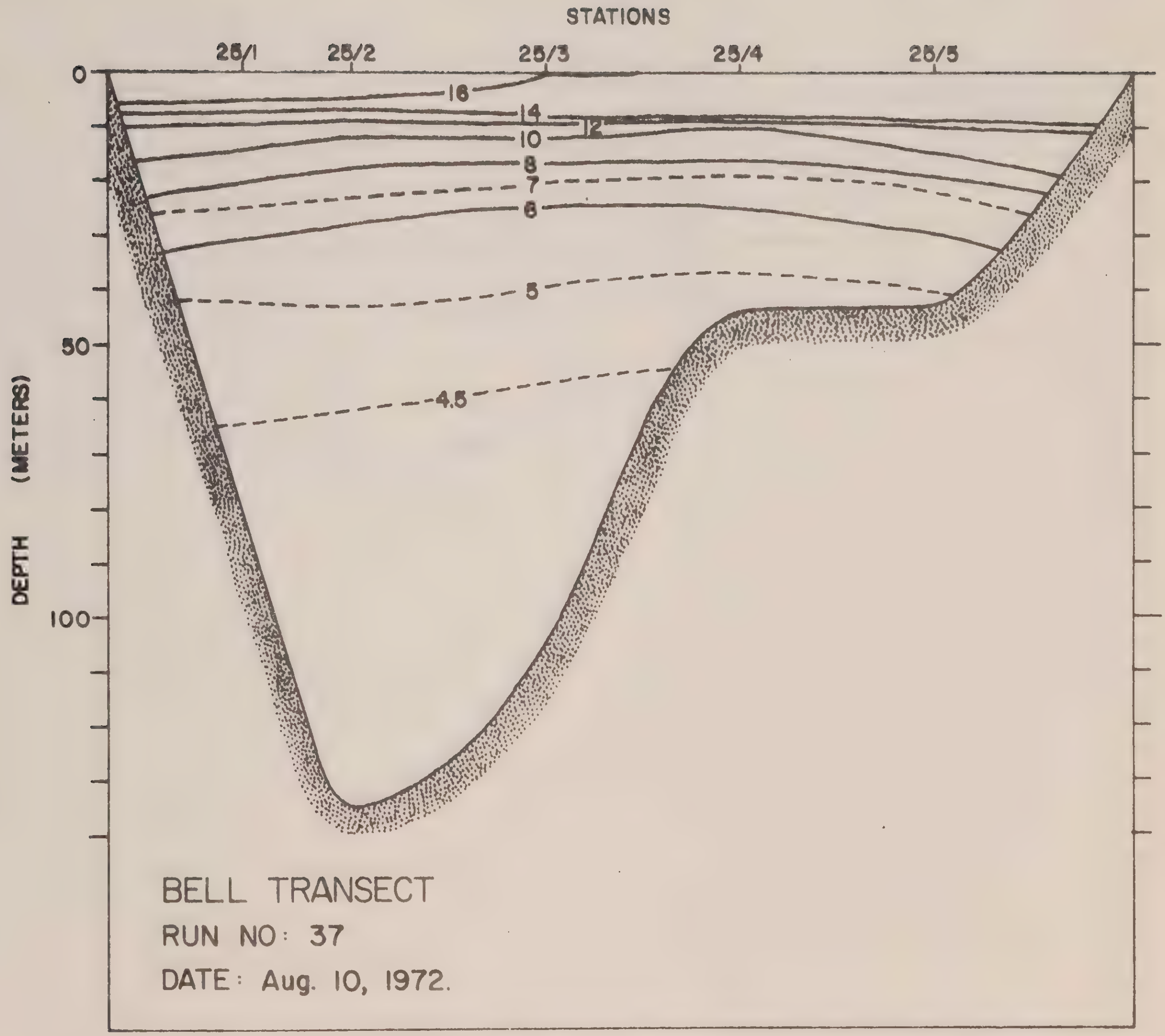

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 143
DATE: Nov. 10, 1972.

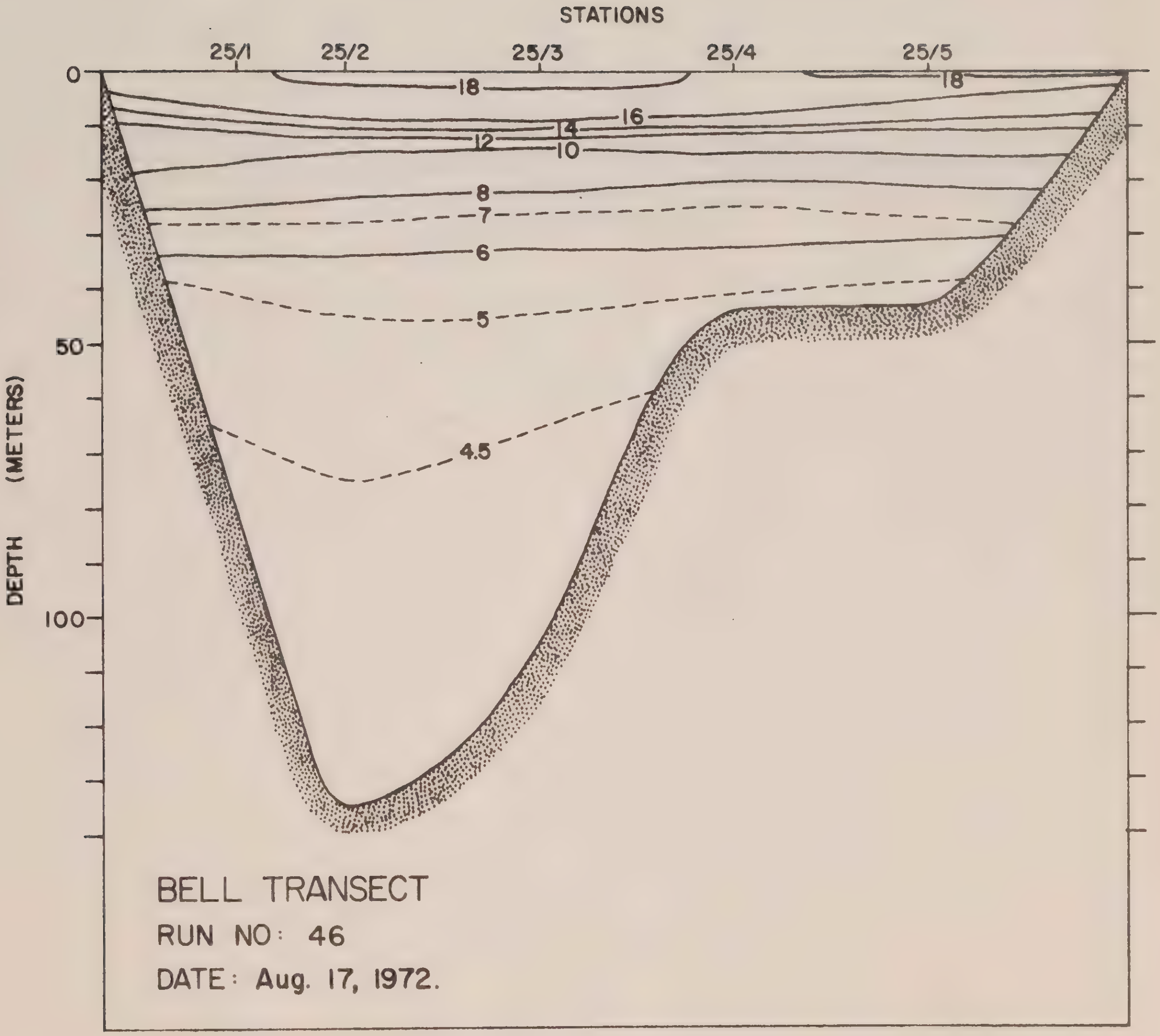

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METERS)
0 2 4 6
SECCHI DISC
RUN NO: 146
DATE: Nov. 14-15, 1972.

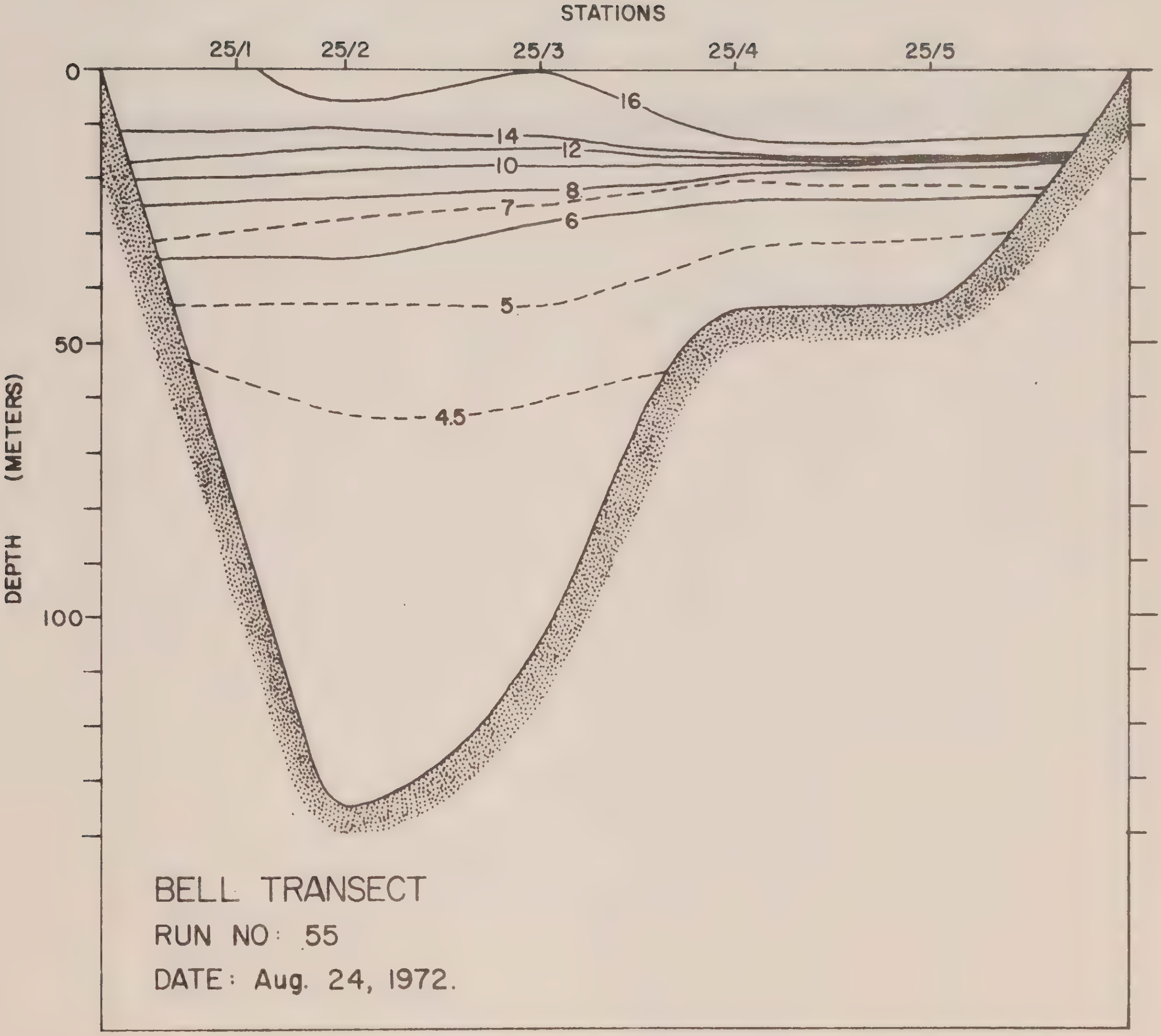

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METERS)
0 2 4 6
SECCHI DISC
RUN NO: 151
DATE: Nov. 17-18, 1972.

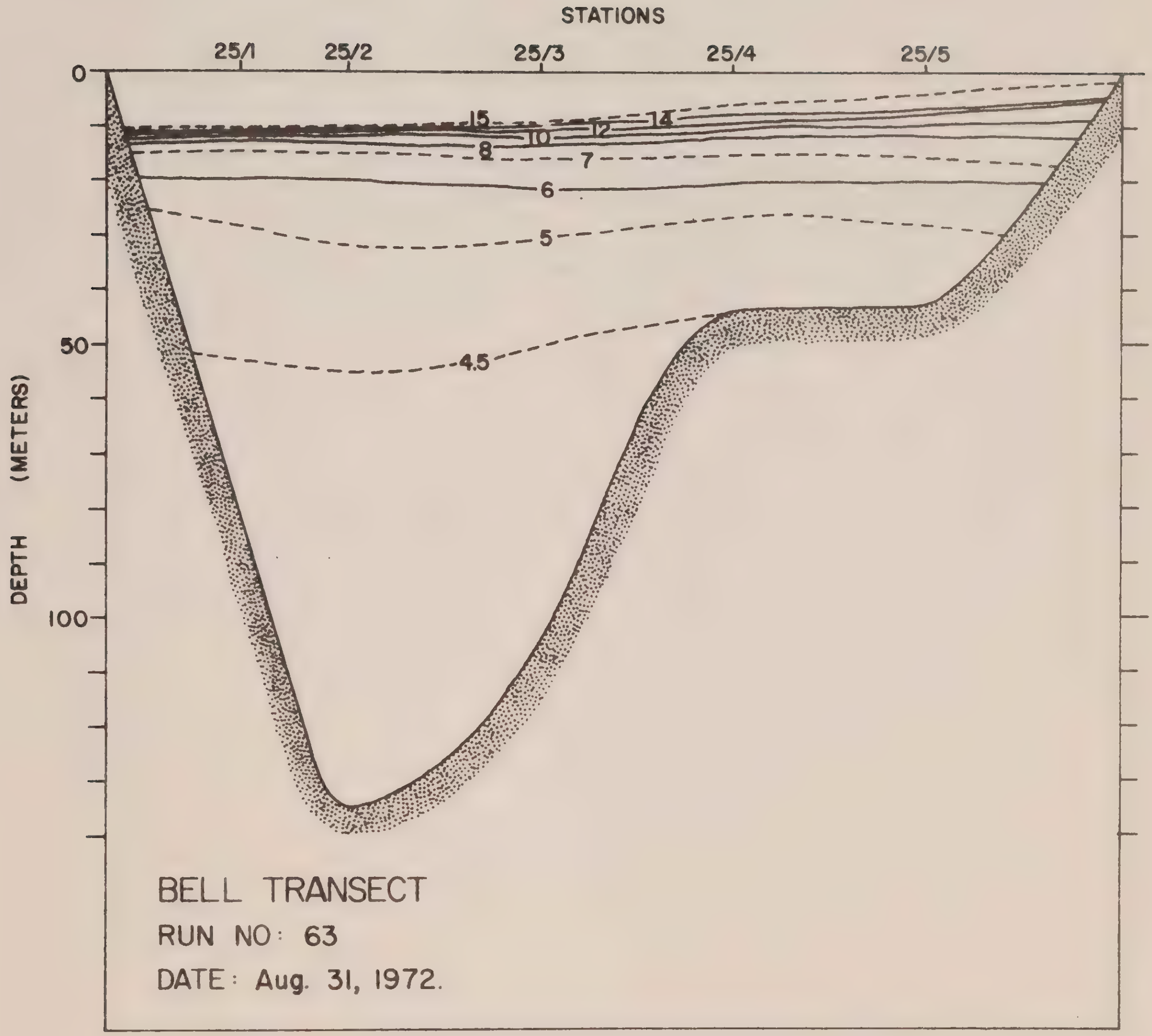

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METERS)
0 2 4 6
SECCHI DISC
RUN NO: 153
DATE: Nov. 24-25, 1972.

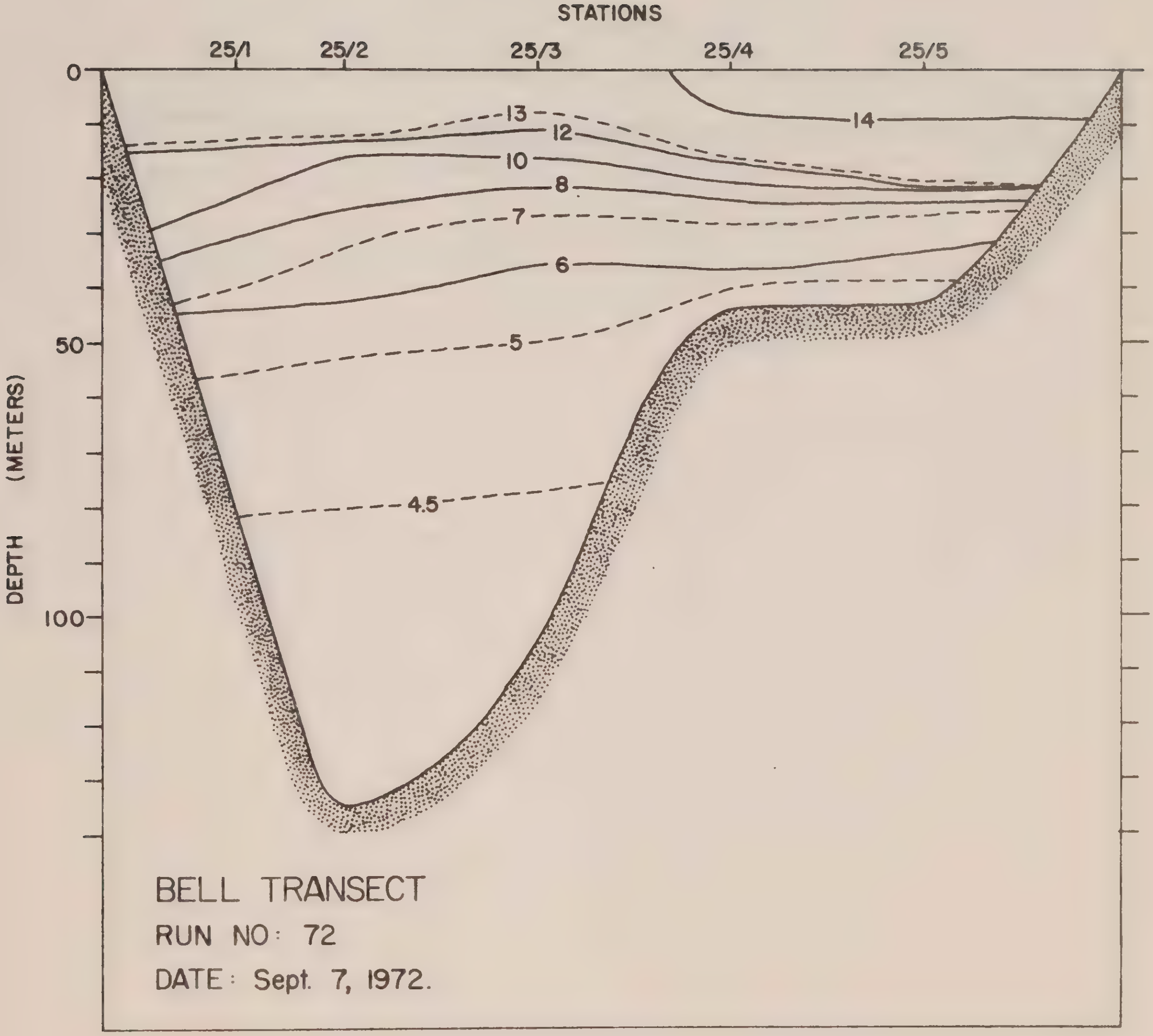
BELL TRANSECT (AUGUST 10 - NOVEMBER 16)

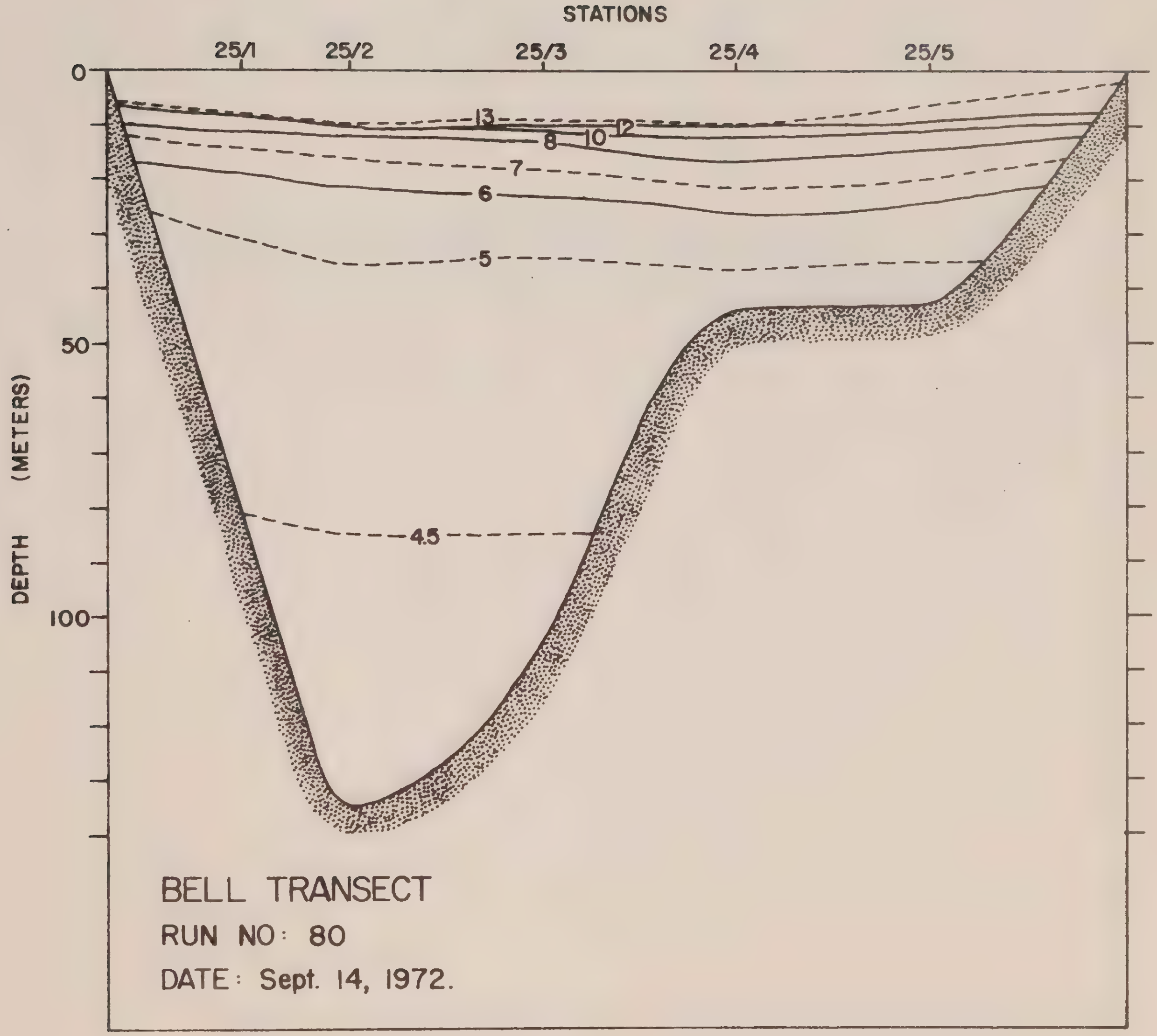

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
16
14
12
10
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 37
DATE: Aug. 10, 1972.

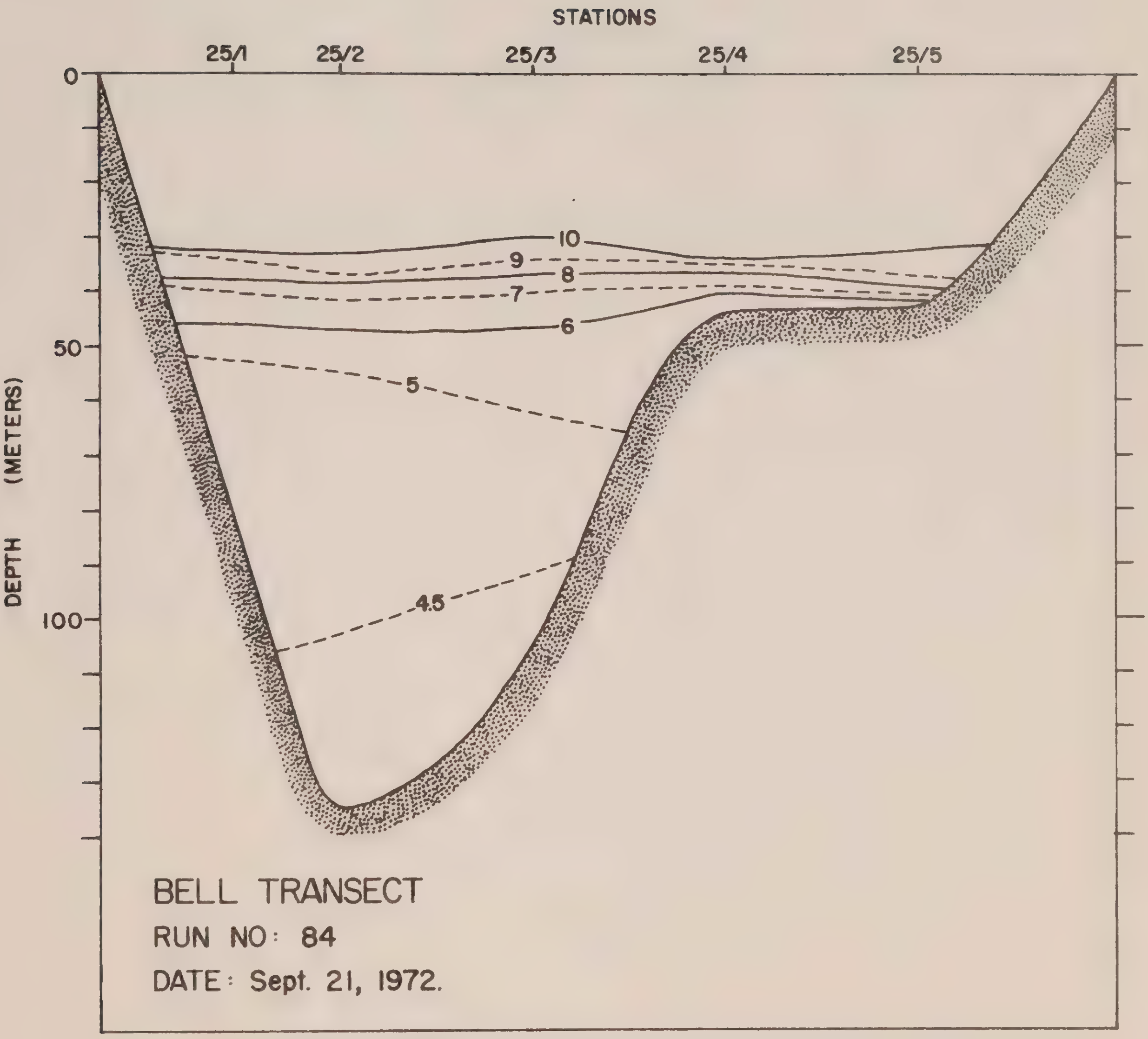

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
18
18
16
14
12
10
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 46
DATE: Aug. 17, 1972.

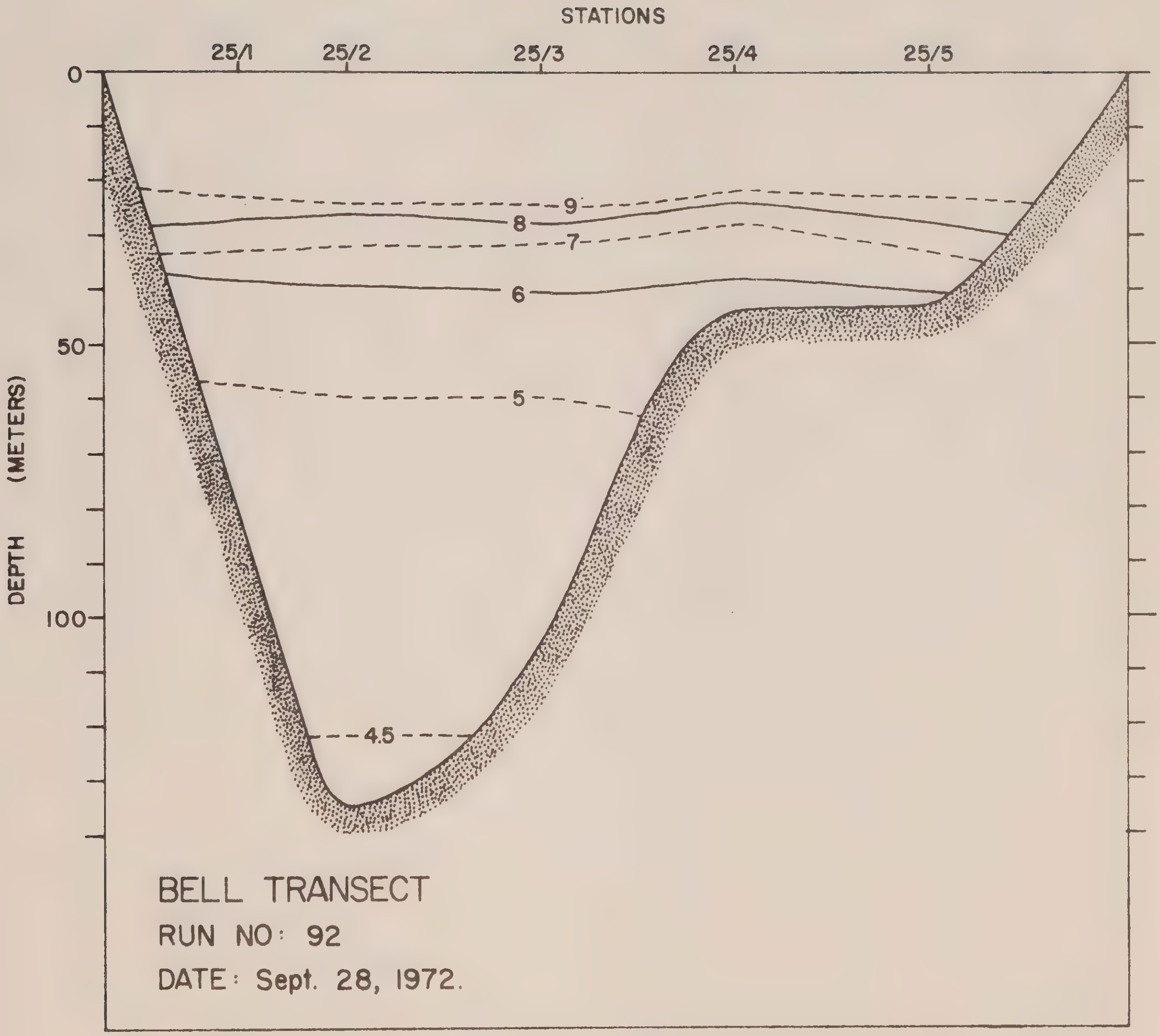

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
16
14
12
10
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 55
DATE: Aug. 24, 1972.

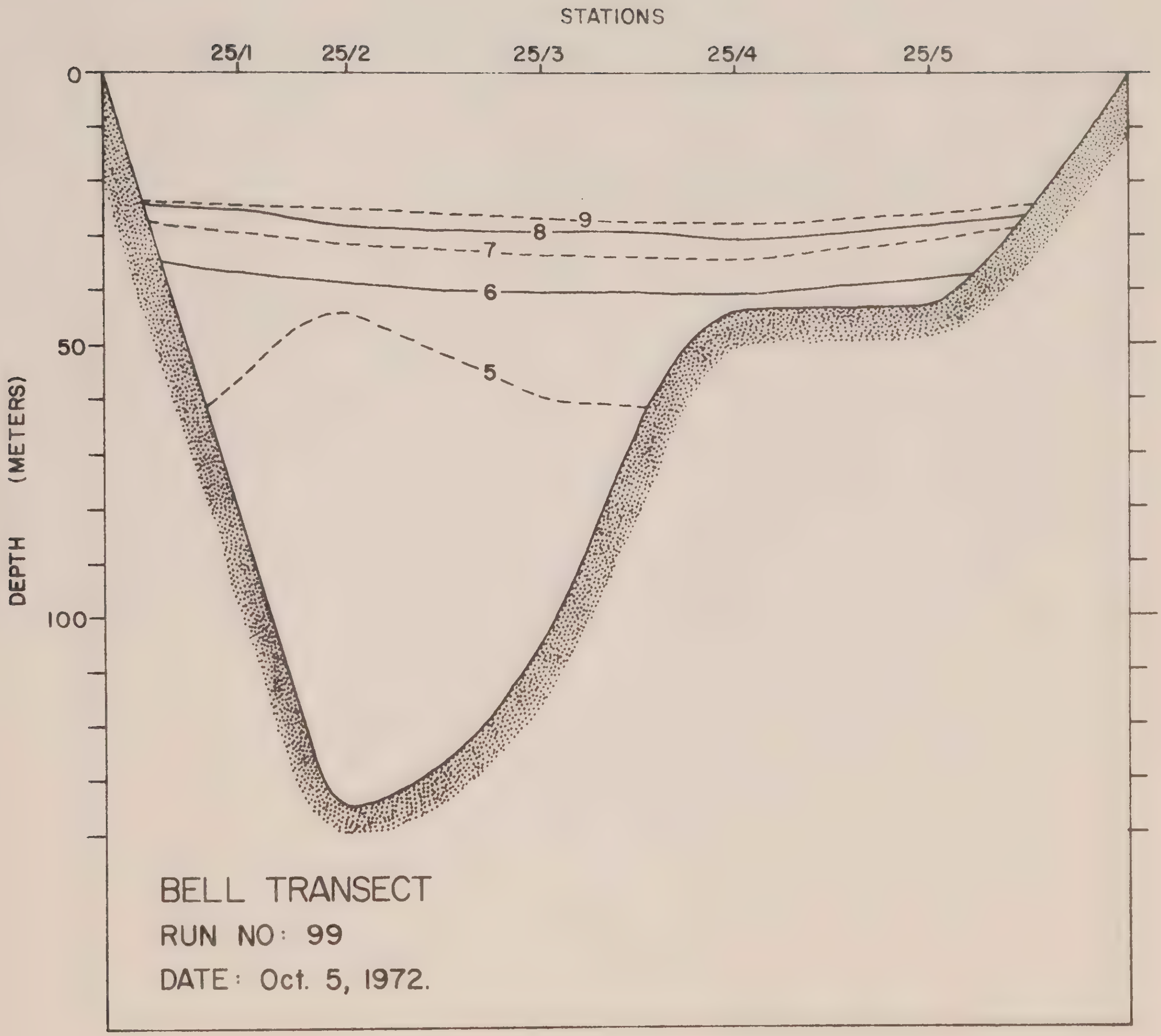

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
15
14
12
10
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 63
DATE: Aug. 31, 1972.

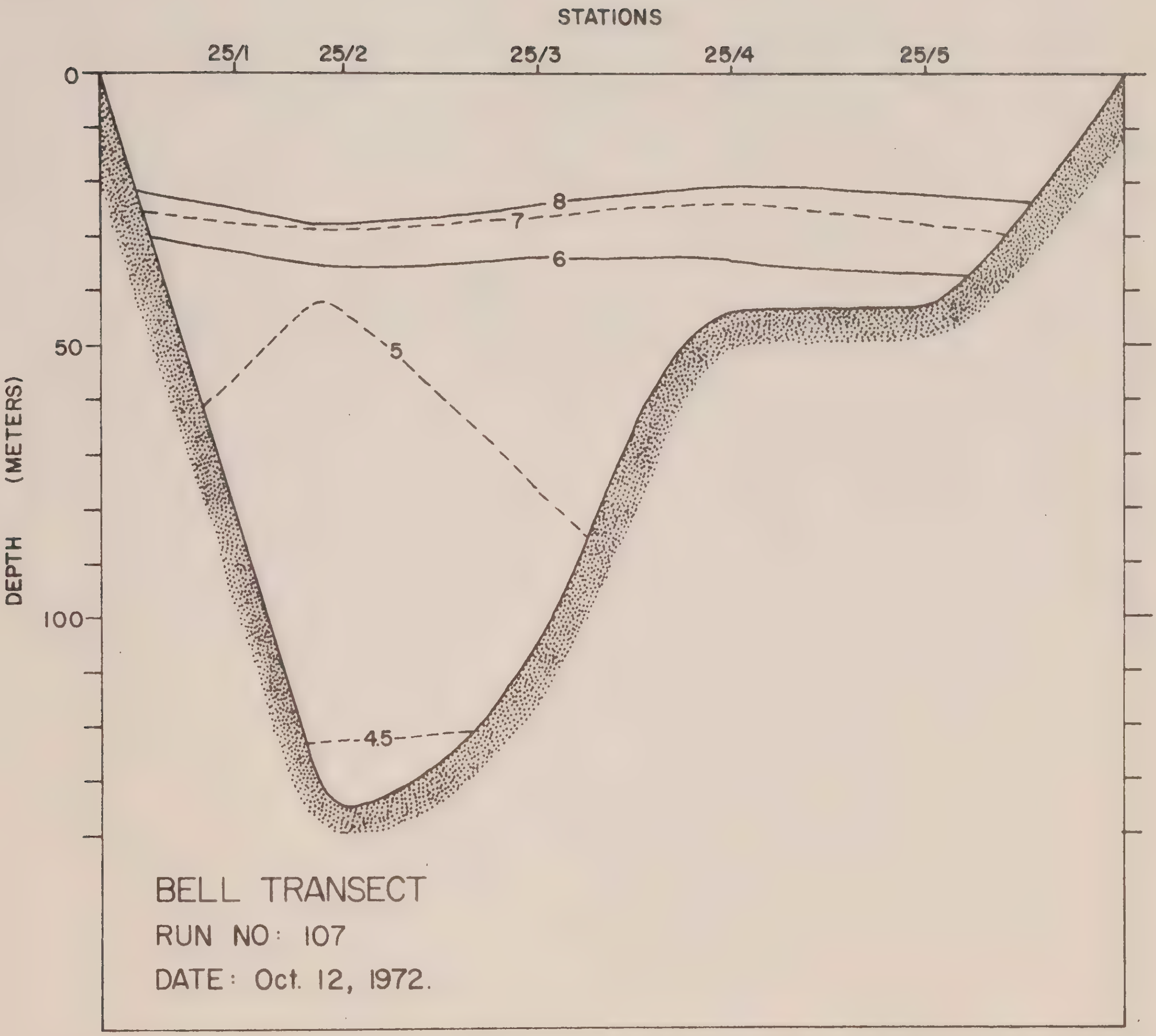

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
14
13
12
10
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 72
DATE: Sept. 7, 1972.

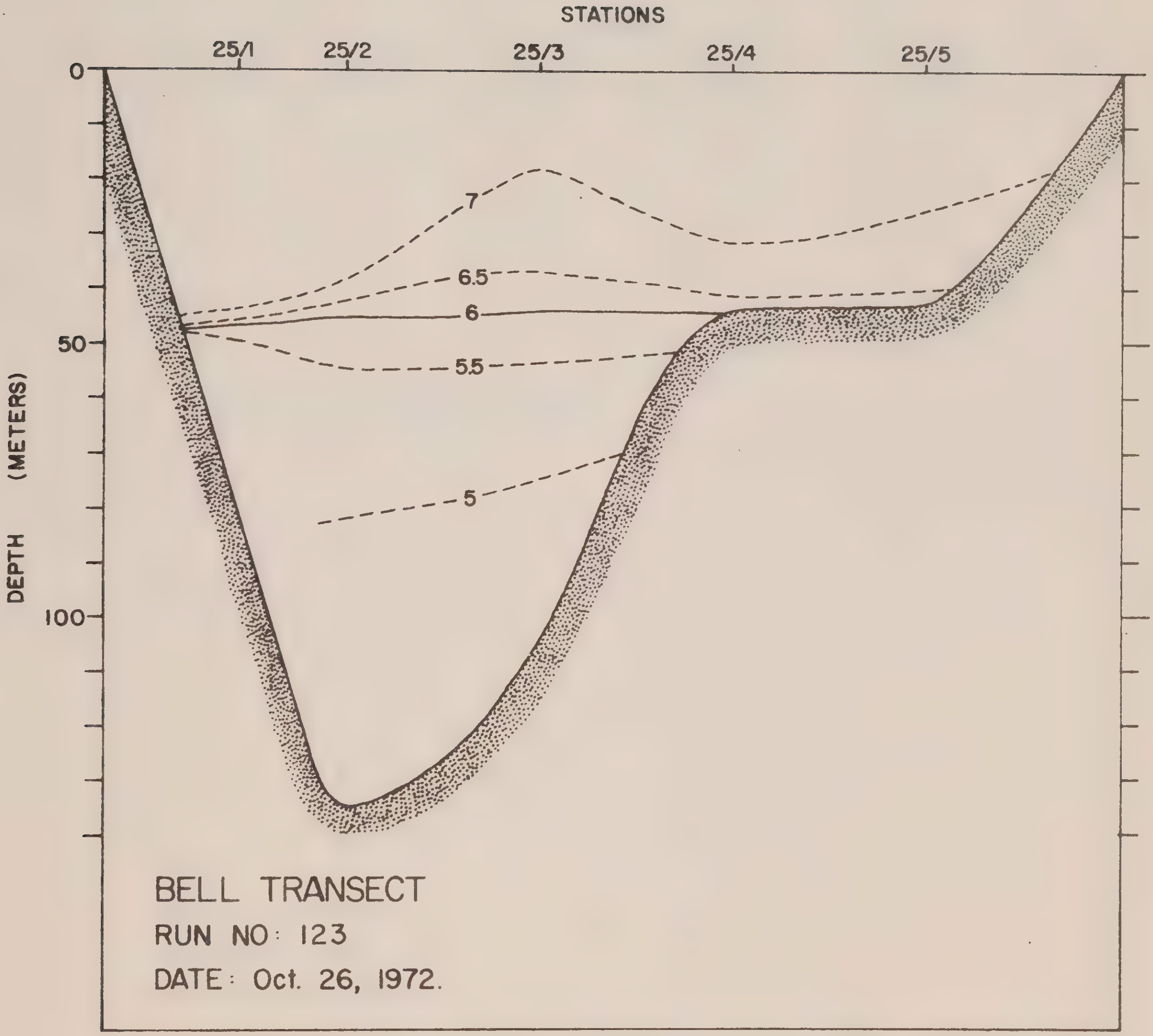

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
13
12
10
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 80
DATE: Sept. 14, 1972.

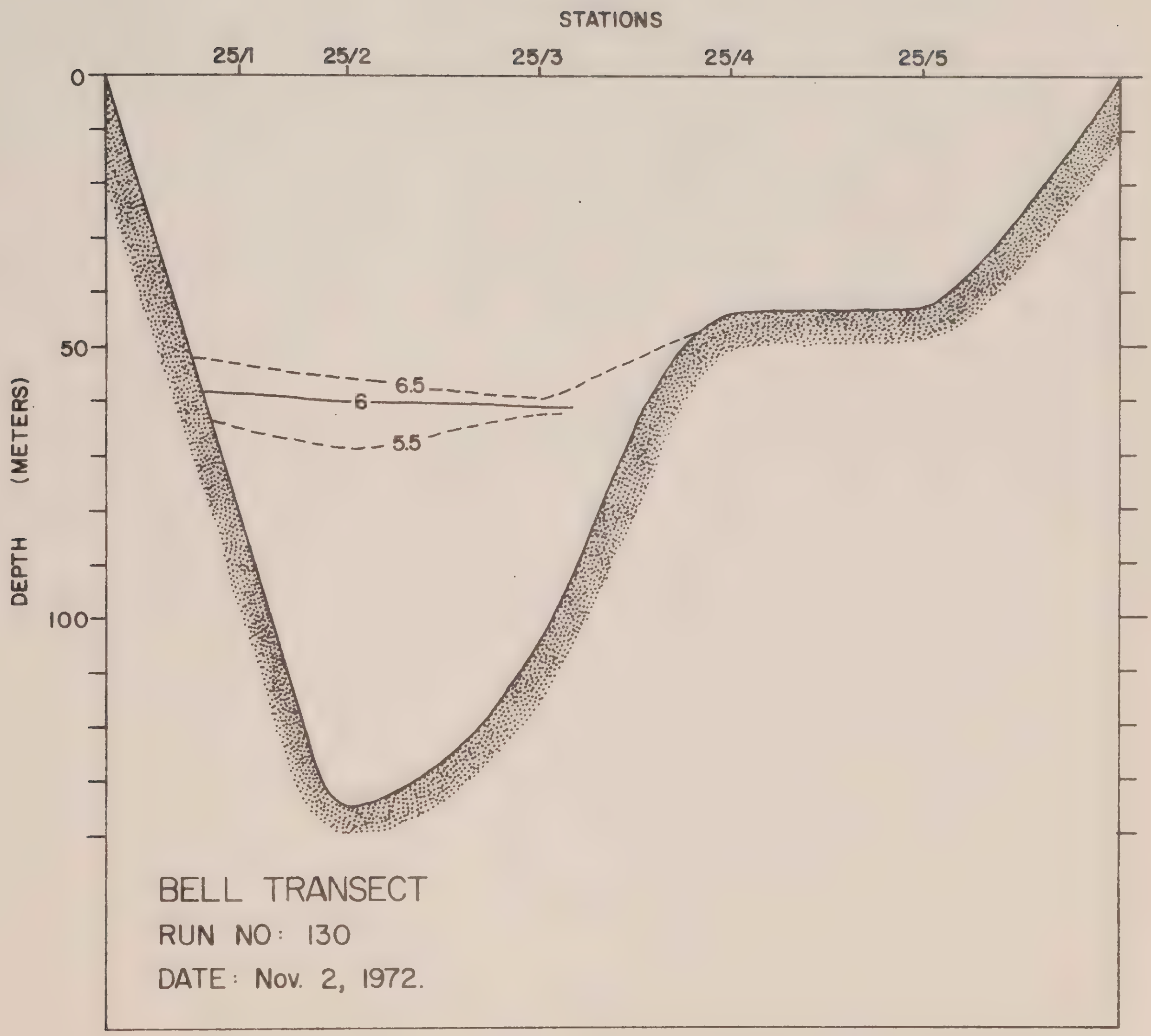

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
10
9
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 84
DATE: Sept. 21, 1972.


STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
9
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 92
DATE: Sept. 28, 1972.

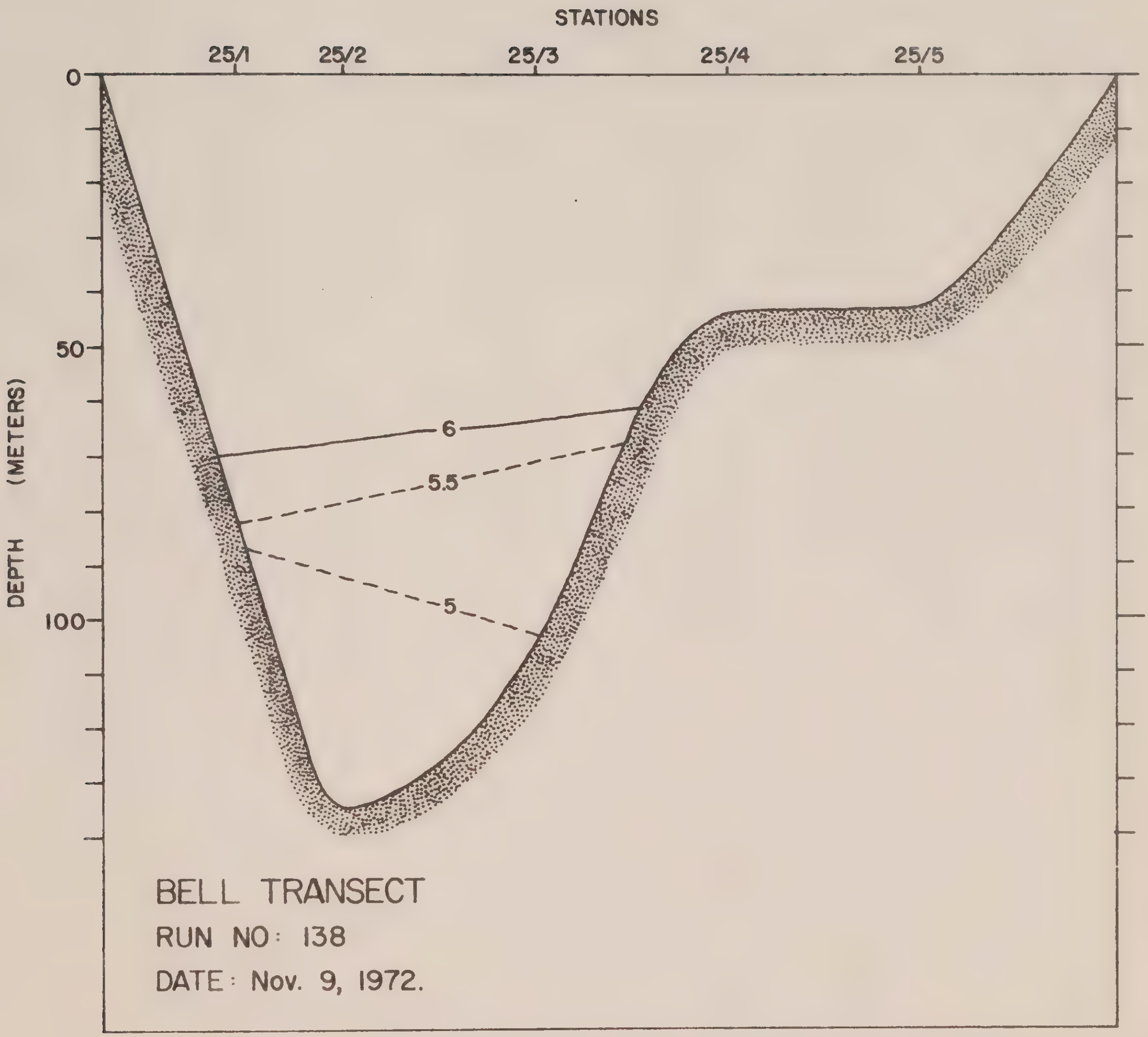

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
9
8
7
6
5
BELL TRANSECT
RUN NO: 99
DATE: Oct. 5, 1972.

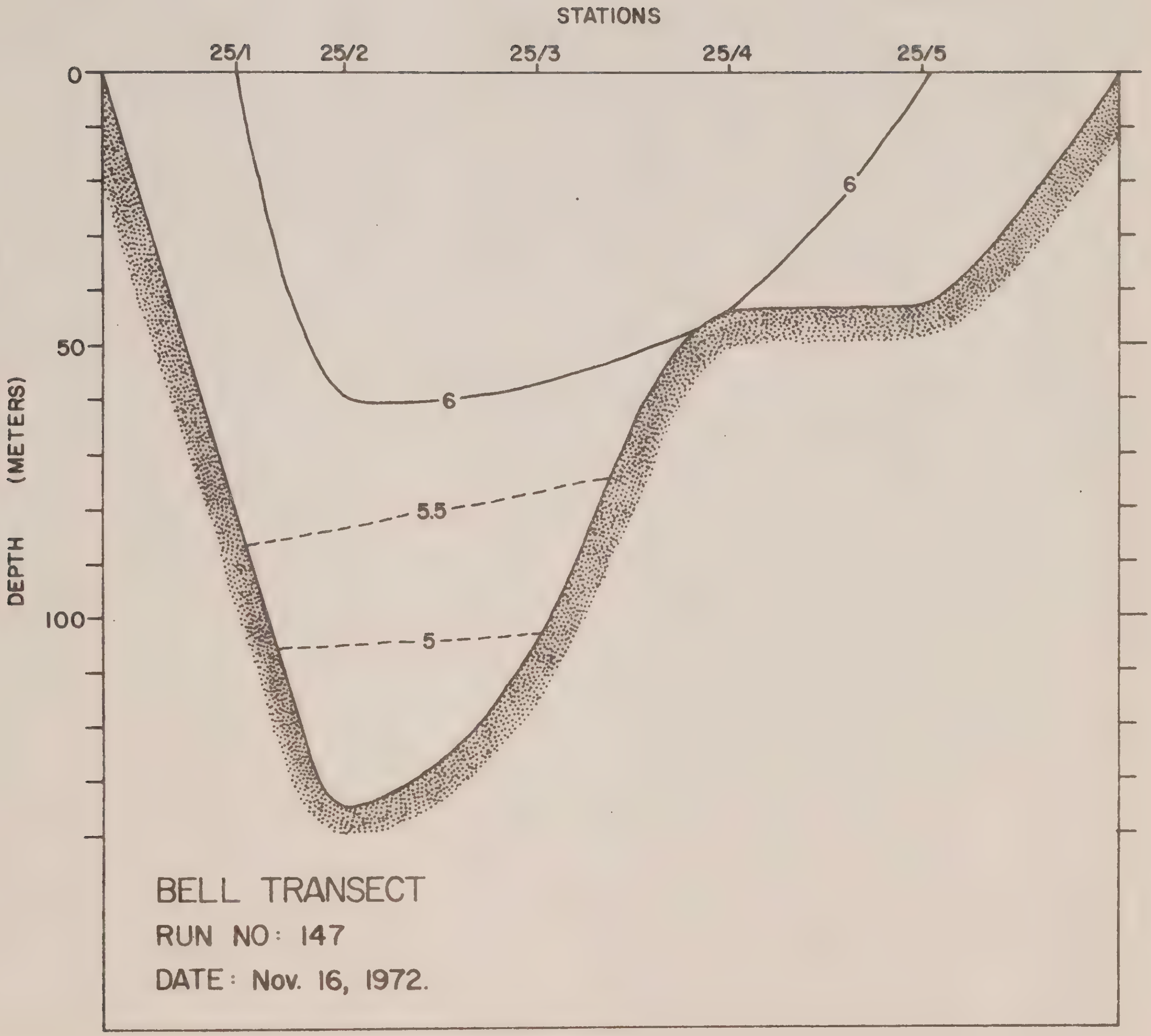

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 107
DATE: Oct. 12, 1972.


STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
7
6.5
6
5.5
5
BELL TRANSECT
RUN NO: 123
DATE: Oct. 26, 1972.



STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
6.5
6
5.5
BELL TRANSECT
RUN NO: 130
DATE: Nov. 2, 1972.

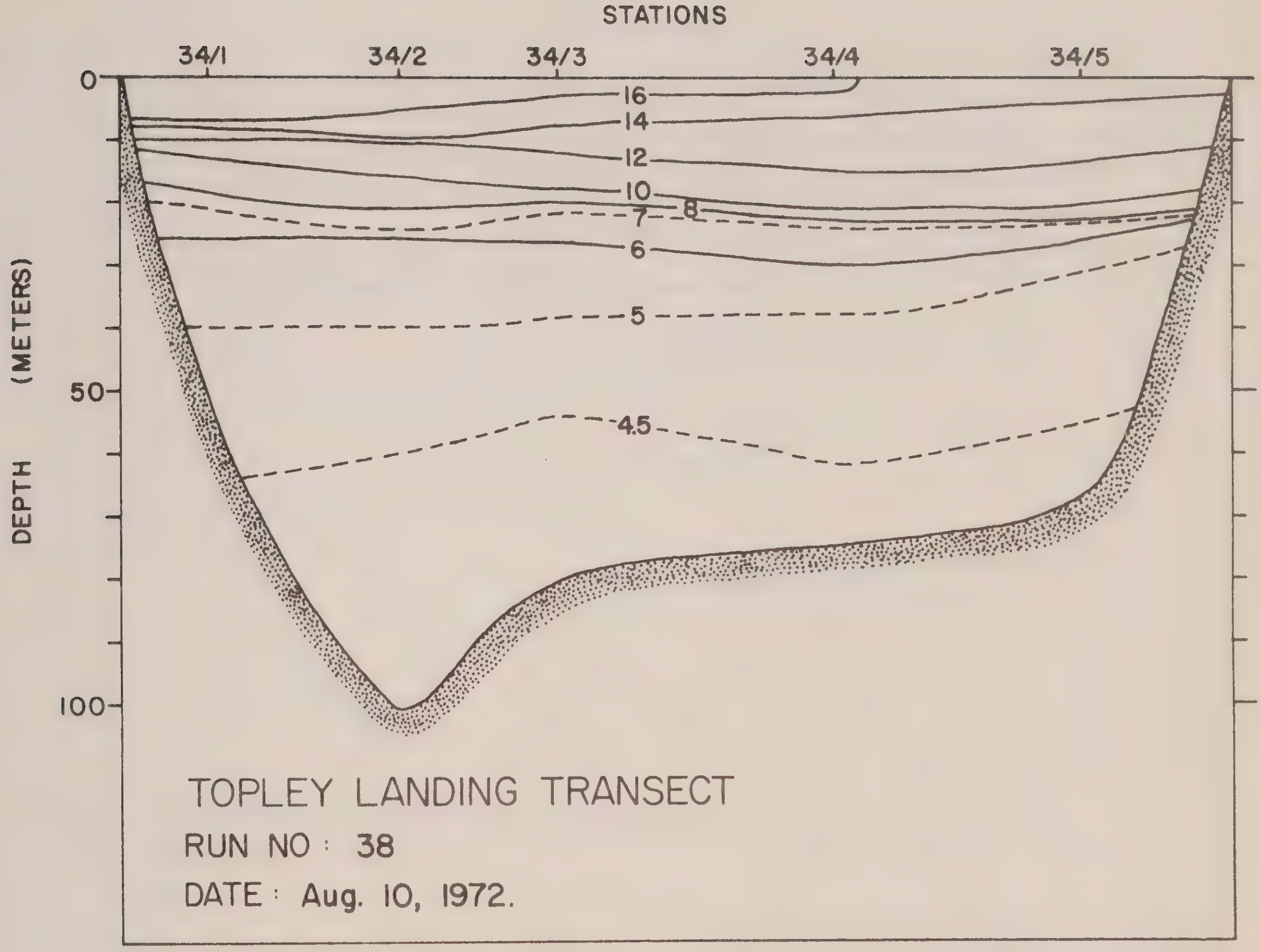

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
6
5.5
5
BELL TRANSECT
RUN NO: 138
DATE: Nov. 9, 1972.



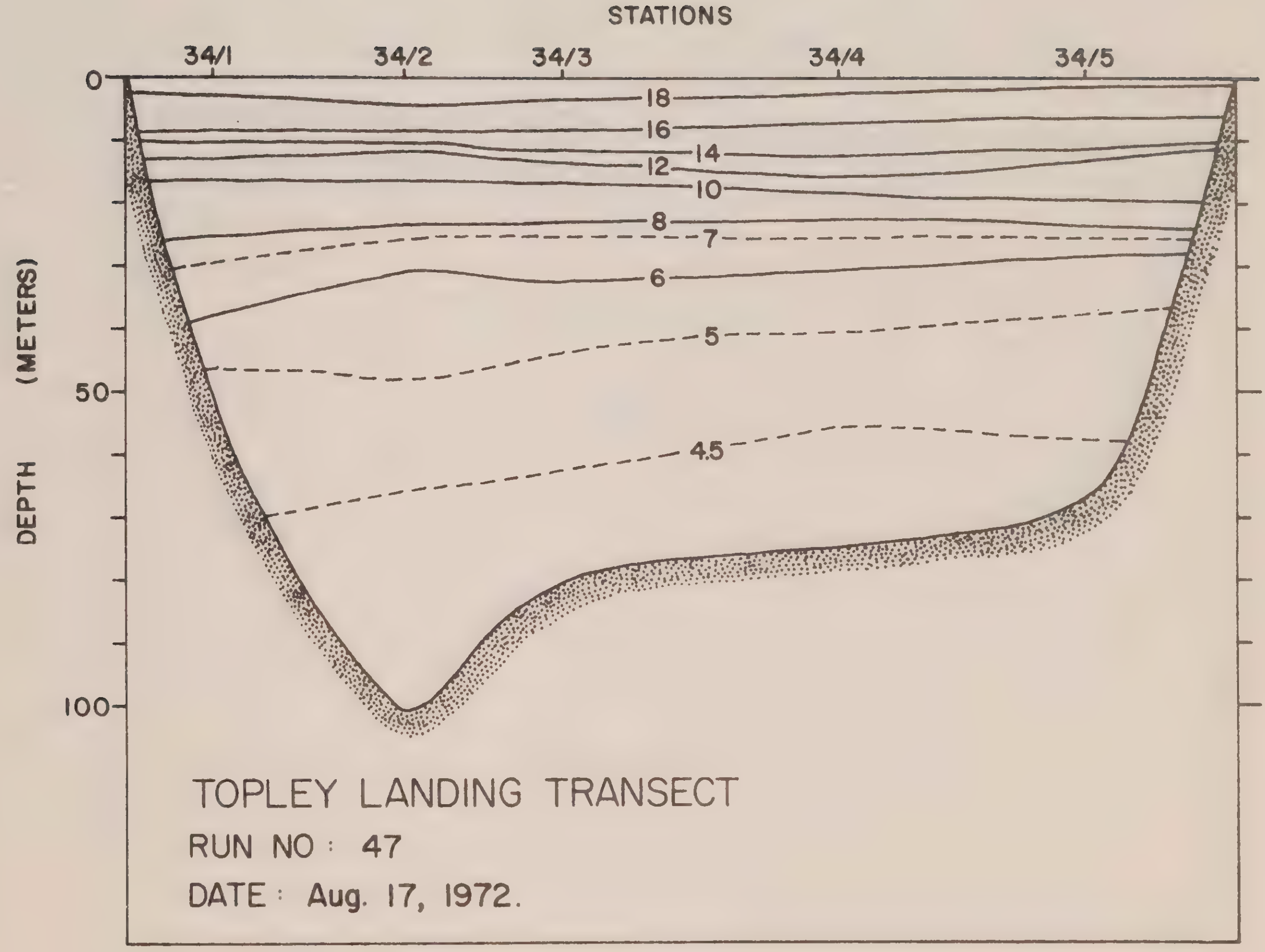
STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
6
6
5.5
5
BELL TRANSECT
RUN NO: 147
DATE: Nov. 16, 1972.

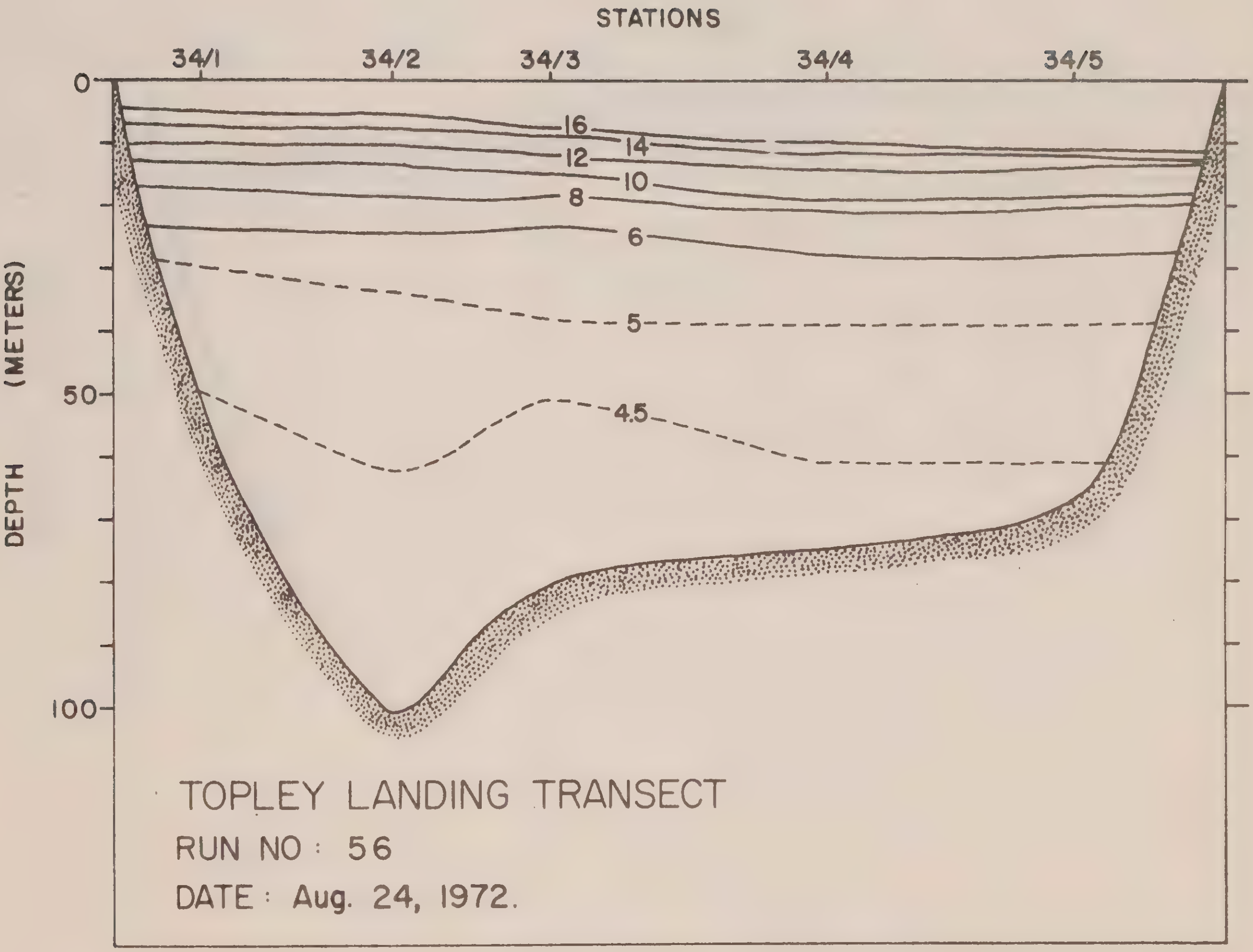
READER'S NOTES:

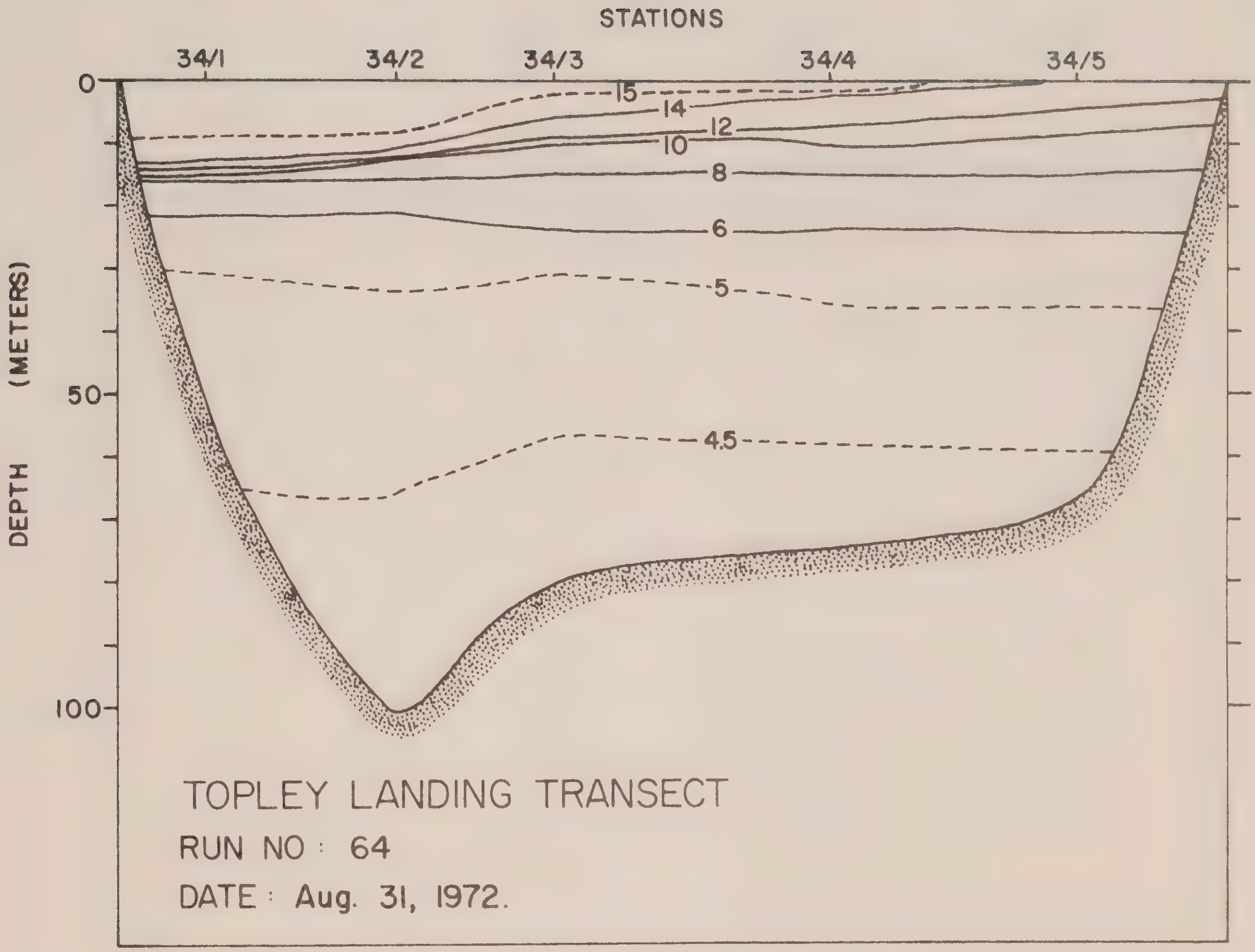
TOPLEY LANDING TRANSECT (AUGUST 10 - NOVEMBER 16)

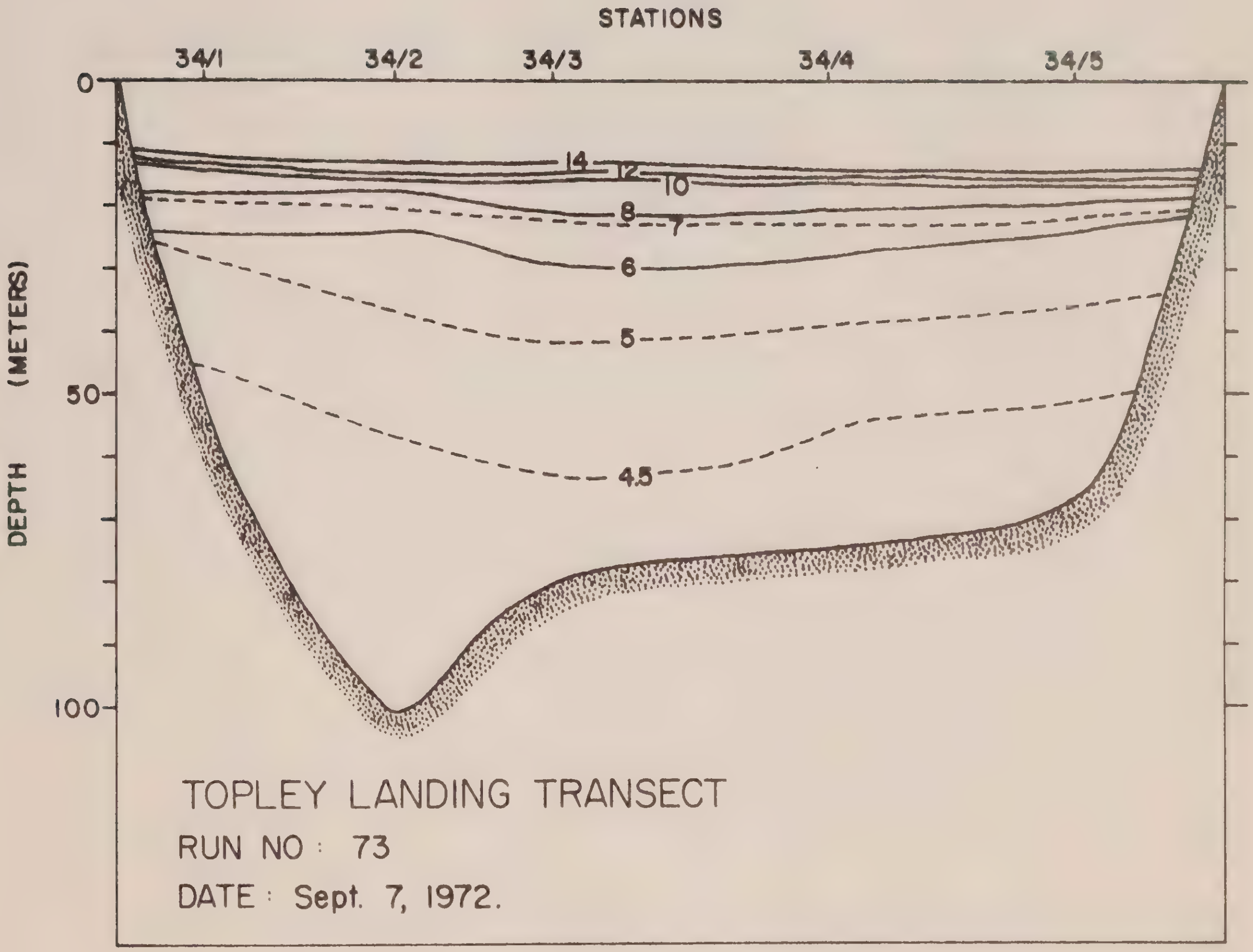


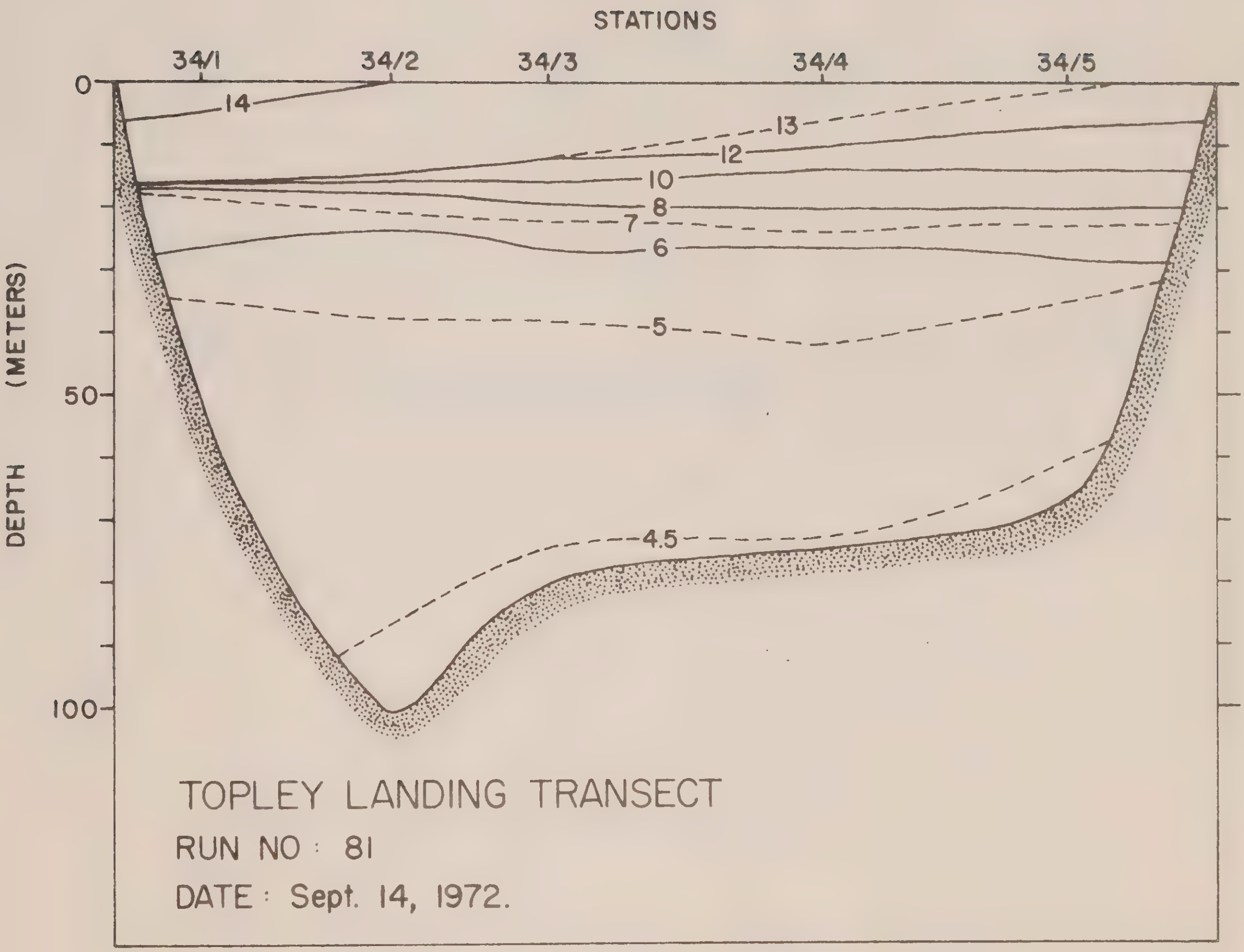
STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
16
14
12
10
8
7
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 38
DATE : Aug. 10, 1972.

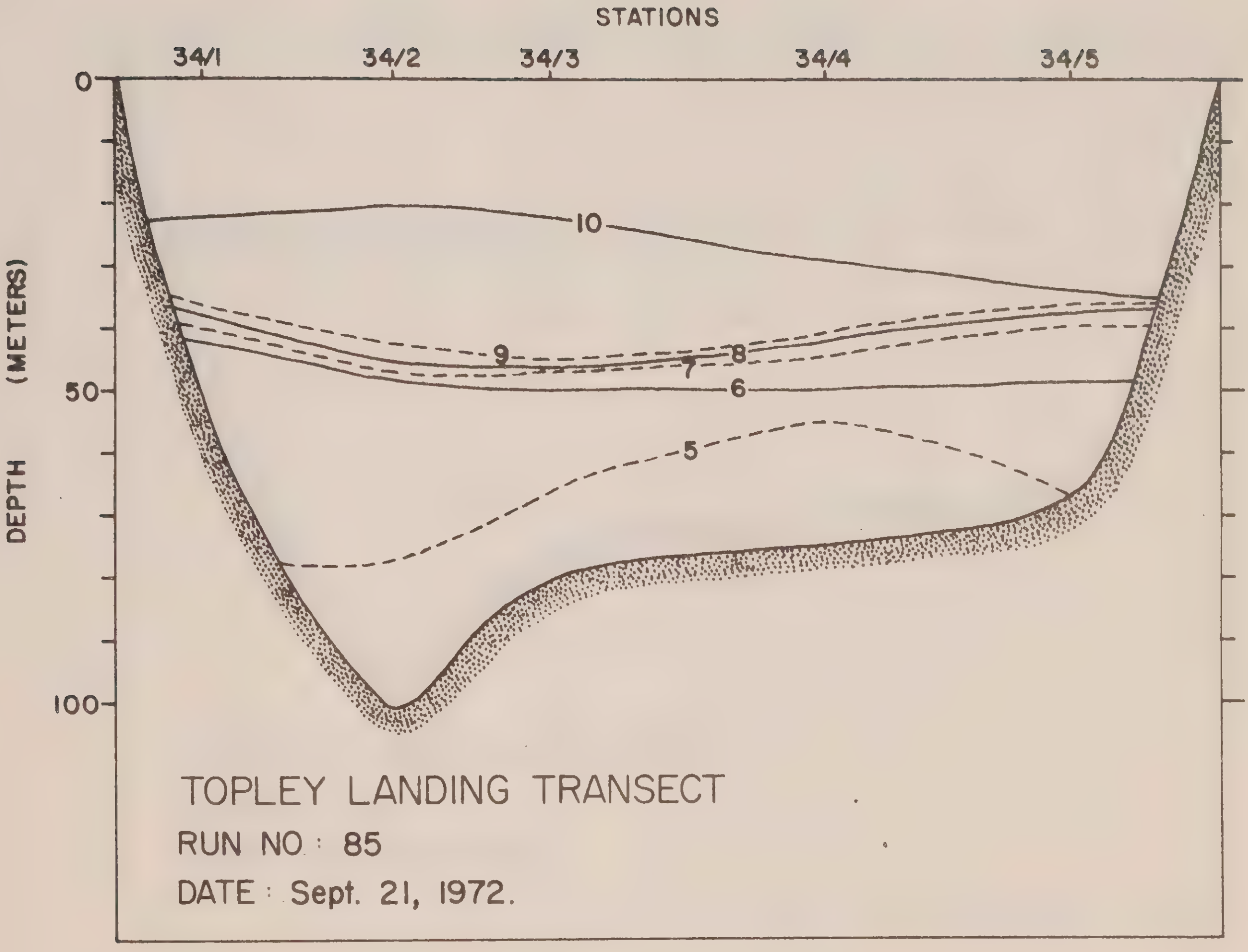

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
18
16
14
12
10
8
7
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 47
DATE : Aug. 17, 1972.


STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
16
14
12
10
8
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 56
DATE : Aug. 24, 1972.

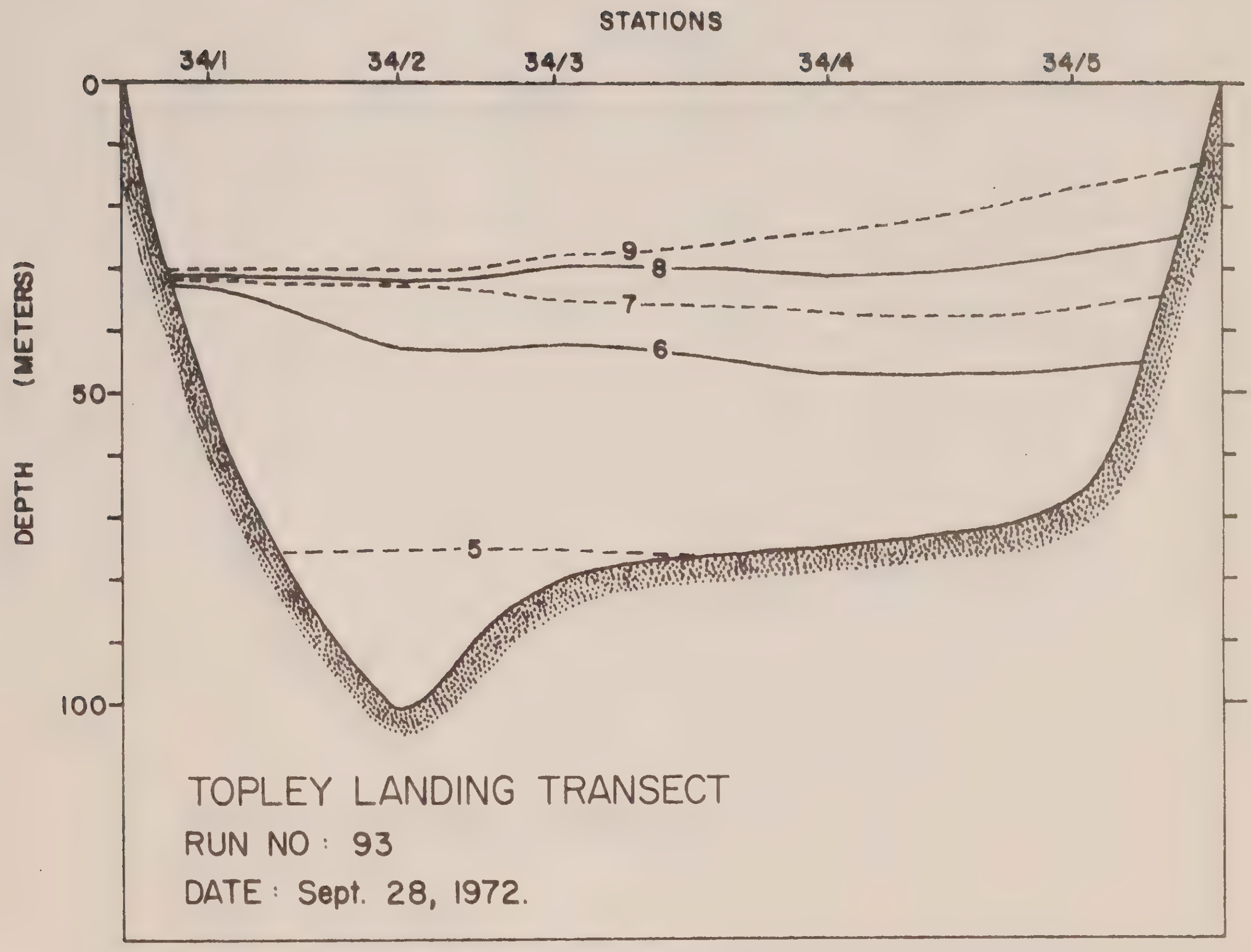

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
15
14
12
10
8
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 64
DATE : Aug. 31, 1972.

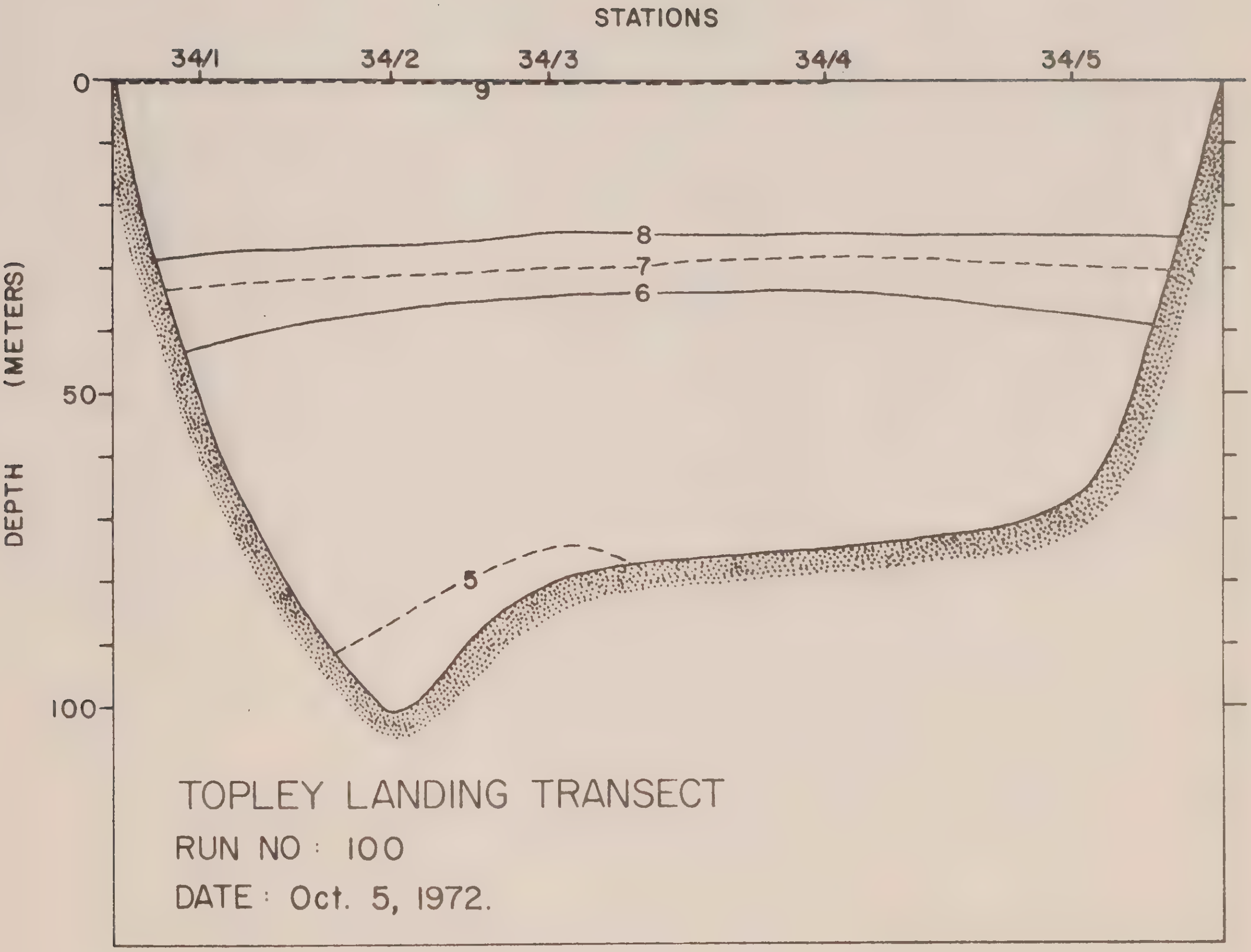

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
14
12
10
8
7
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 73
DATE : Sept. 7, 1972.

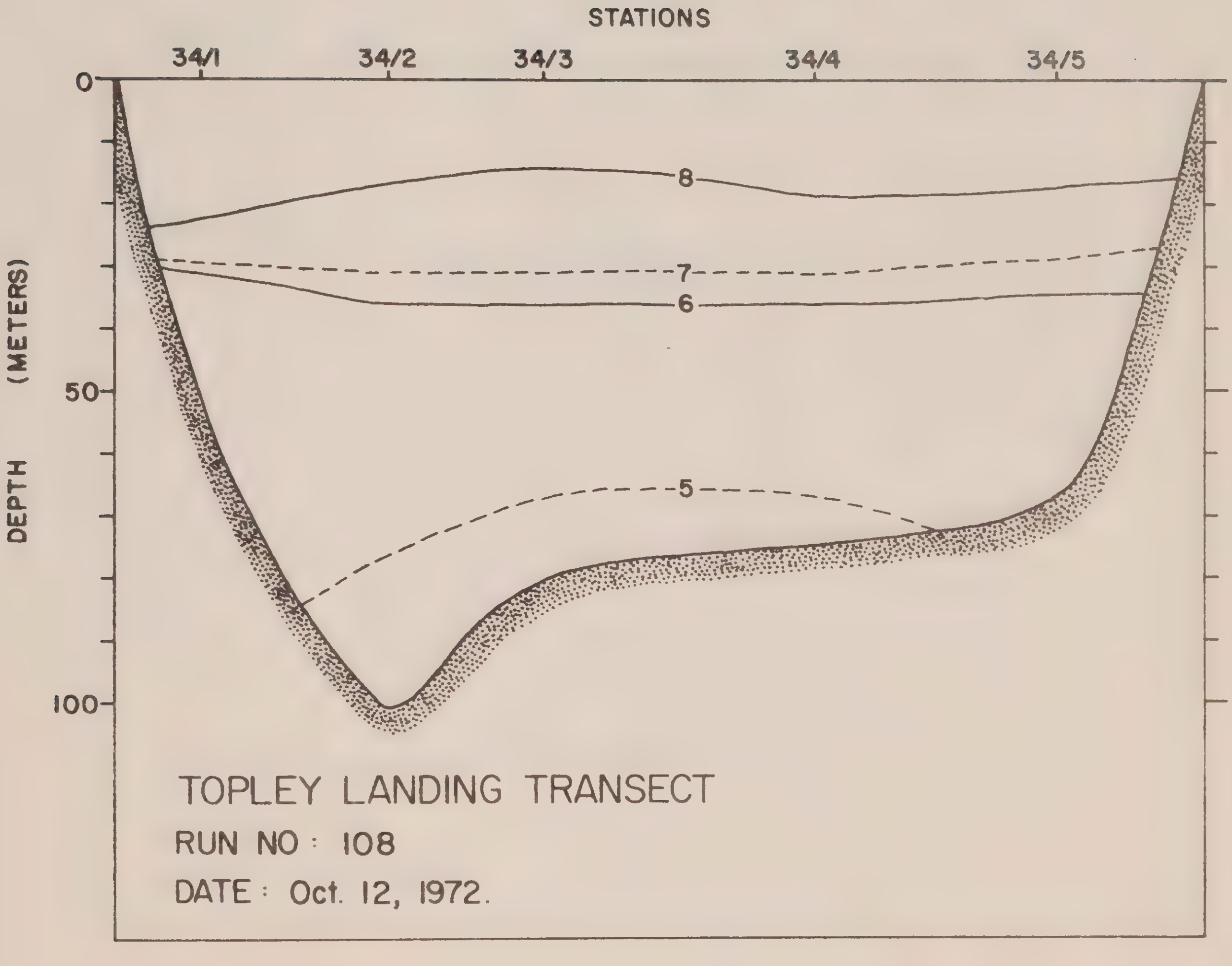

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
14
13
12
10
8
7
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 81
DATE : Sept. 14, 1972.

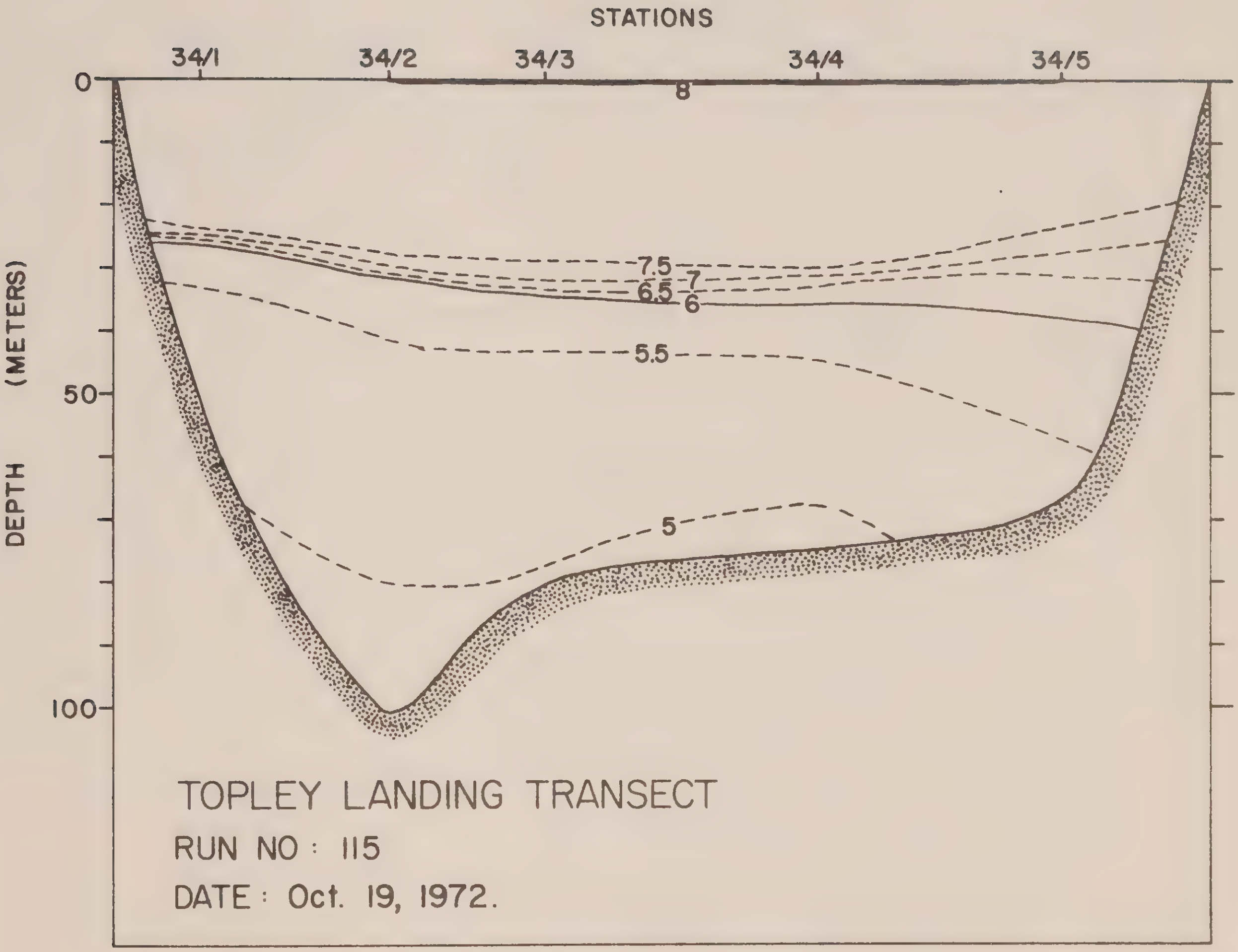


STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
10
9
8
7
6
5
TOPLEY LANDING TRANSECT
RUN NO : 85
DATE : Sept. 21, 1972.

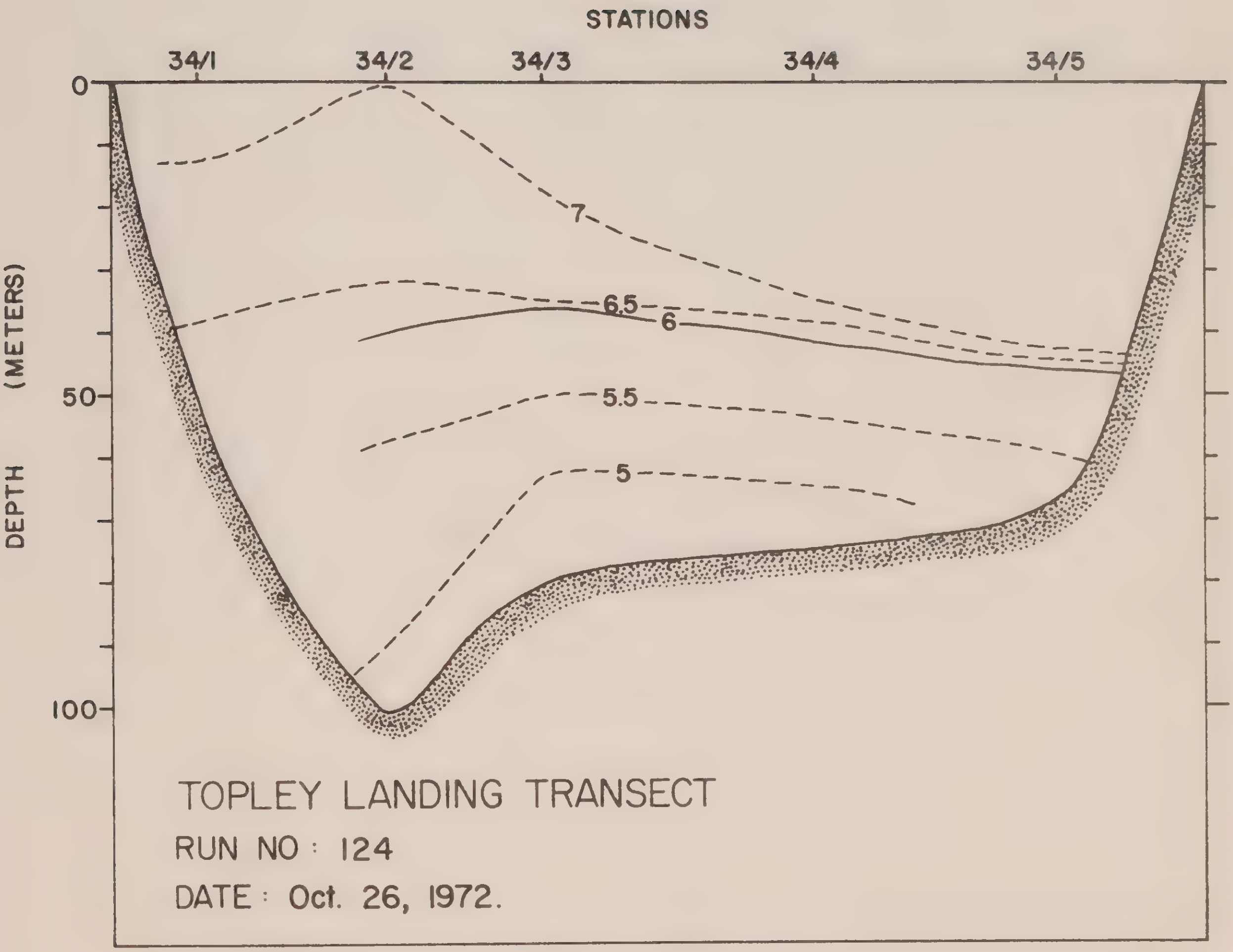

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
9
8
7
6
5
TOPLEY LANDING TRANSECT
RUN NO : 93
DATE : Sept. 28, 1972.

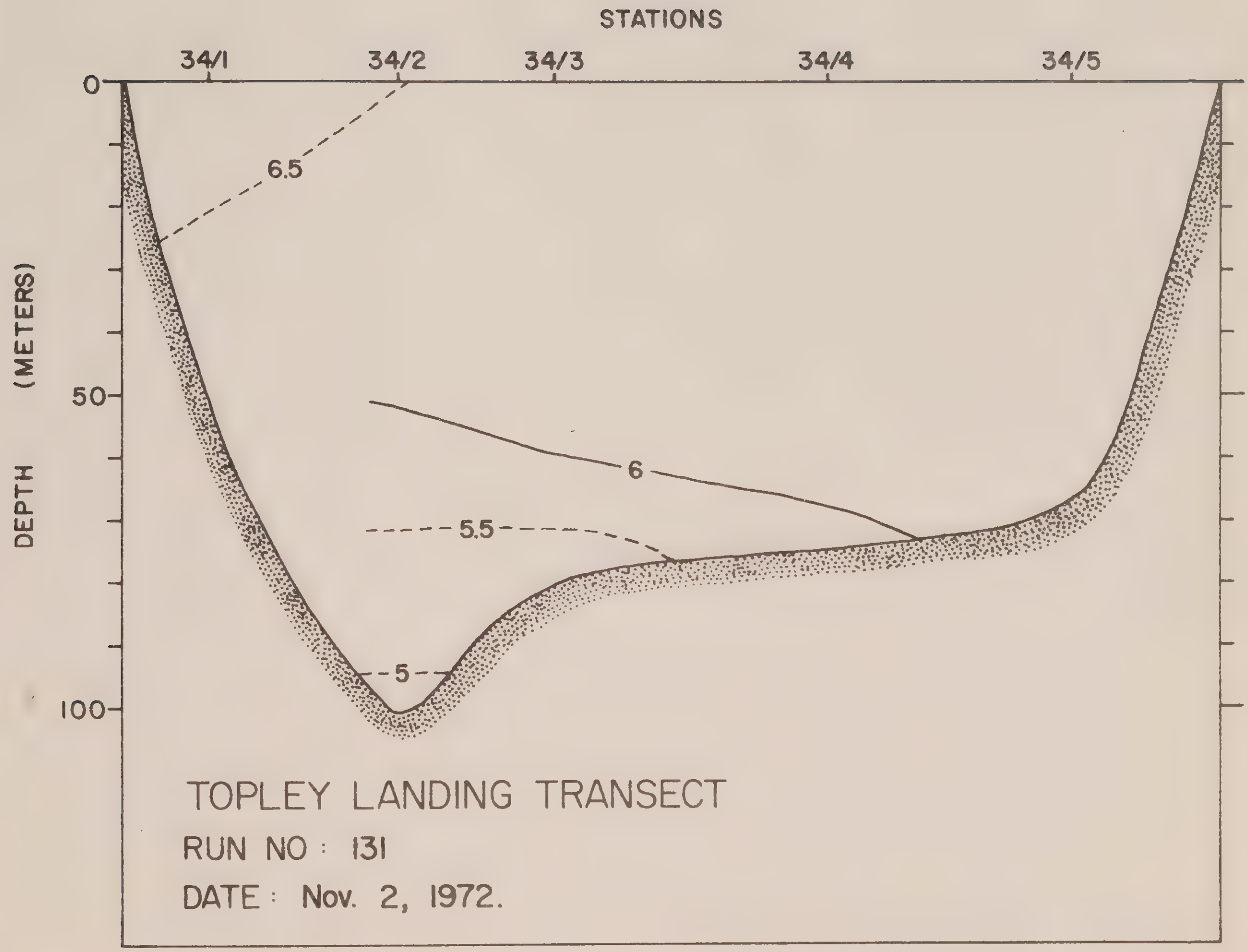

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
9
8
7
6
5
TOPLEY LANDING TRANSECT
RUN NO : 100
DATE : Oct. 5, 1972.

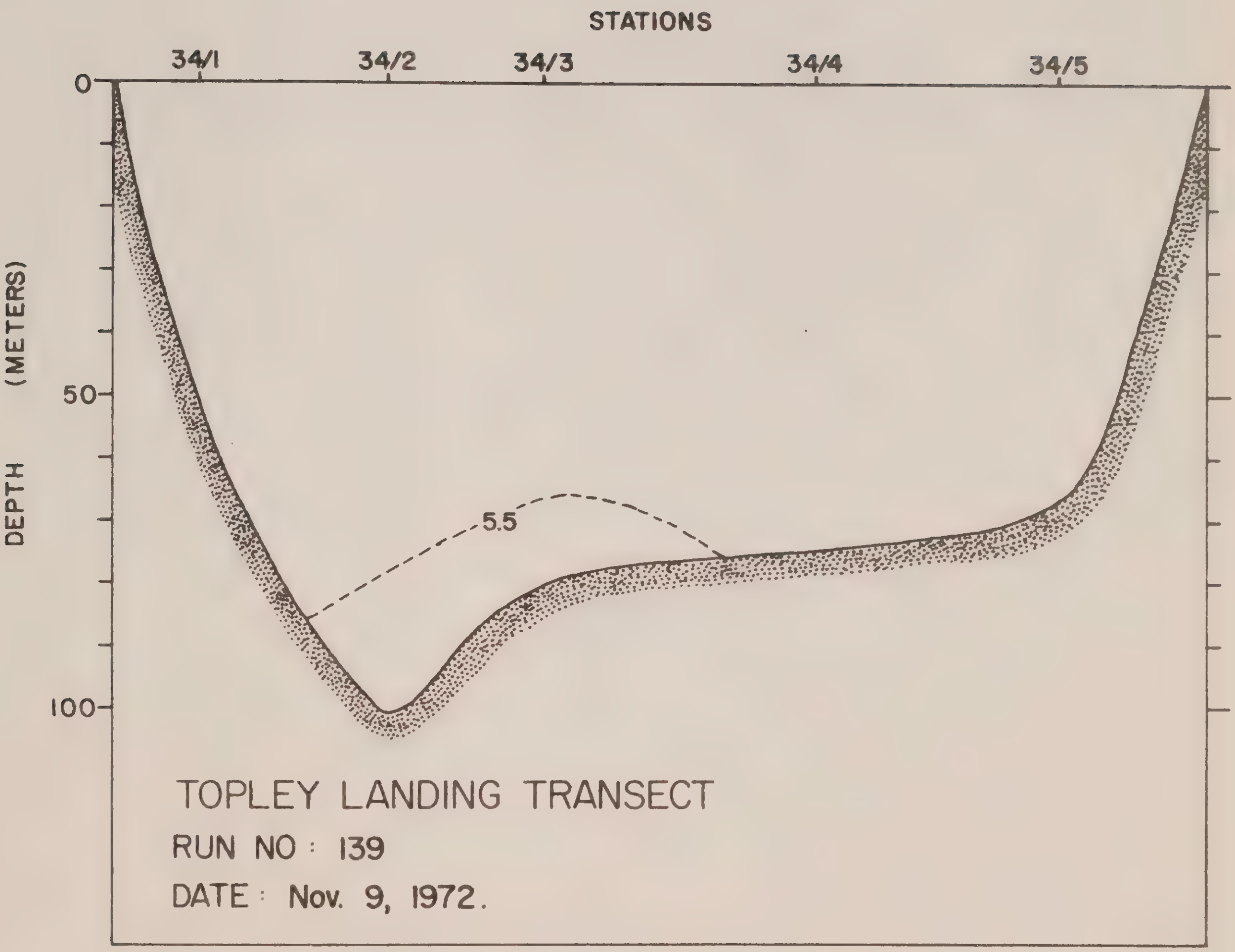

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
8
7
6
5
TOPLEY LANDING TRANSECT
RUN NO : 108
DATE : Oct. 12, 1972.

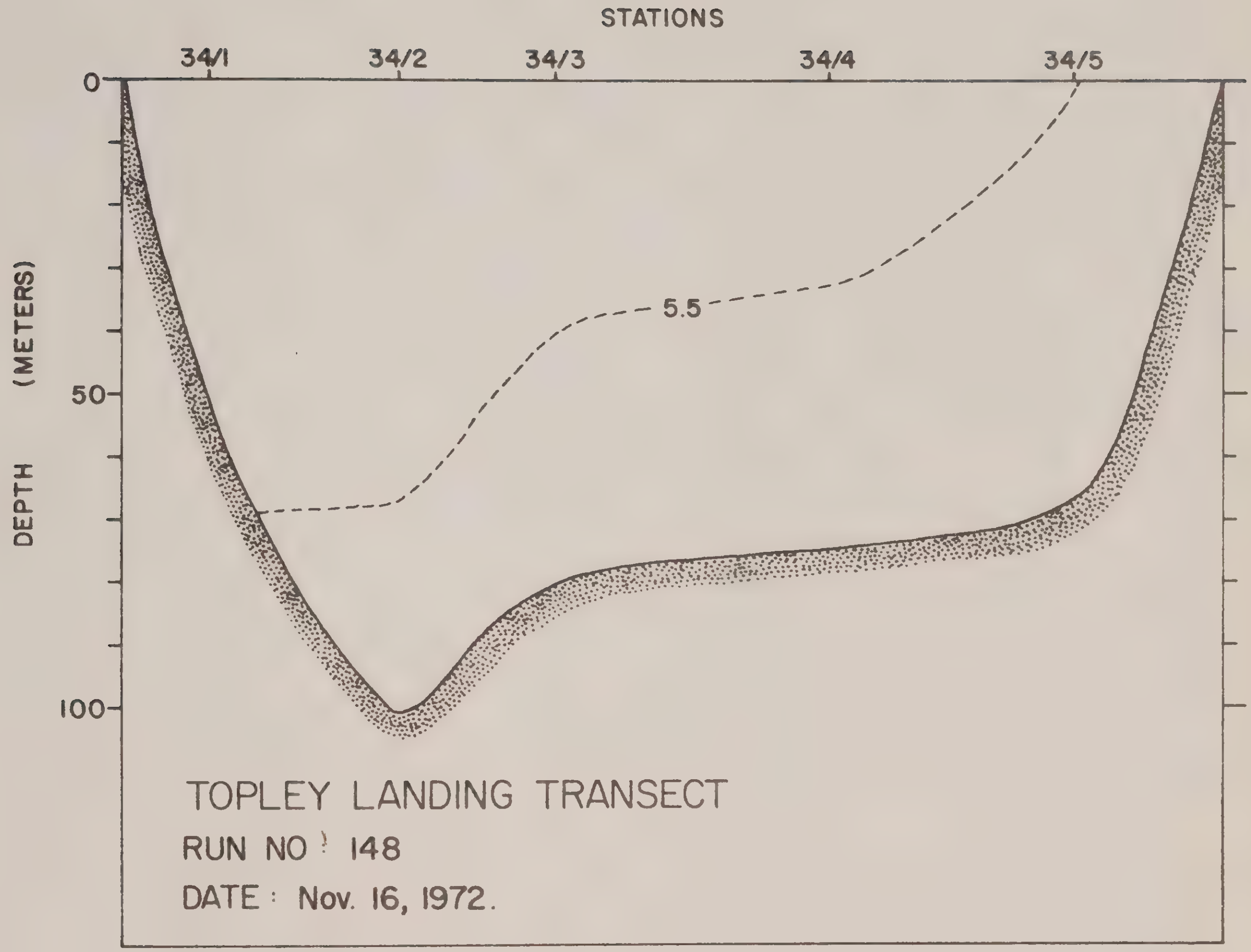


STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
8
7.5
7
6.5
6
5.5
5
TOPLEY LANDING TRANSECT
RUN NO : 115
DATE : Oct. 19, 1972.

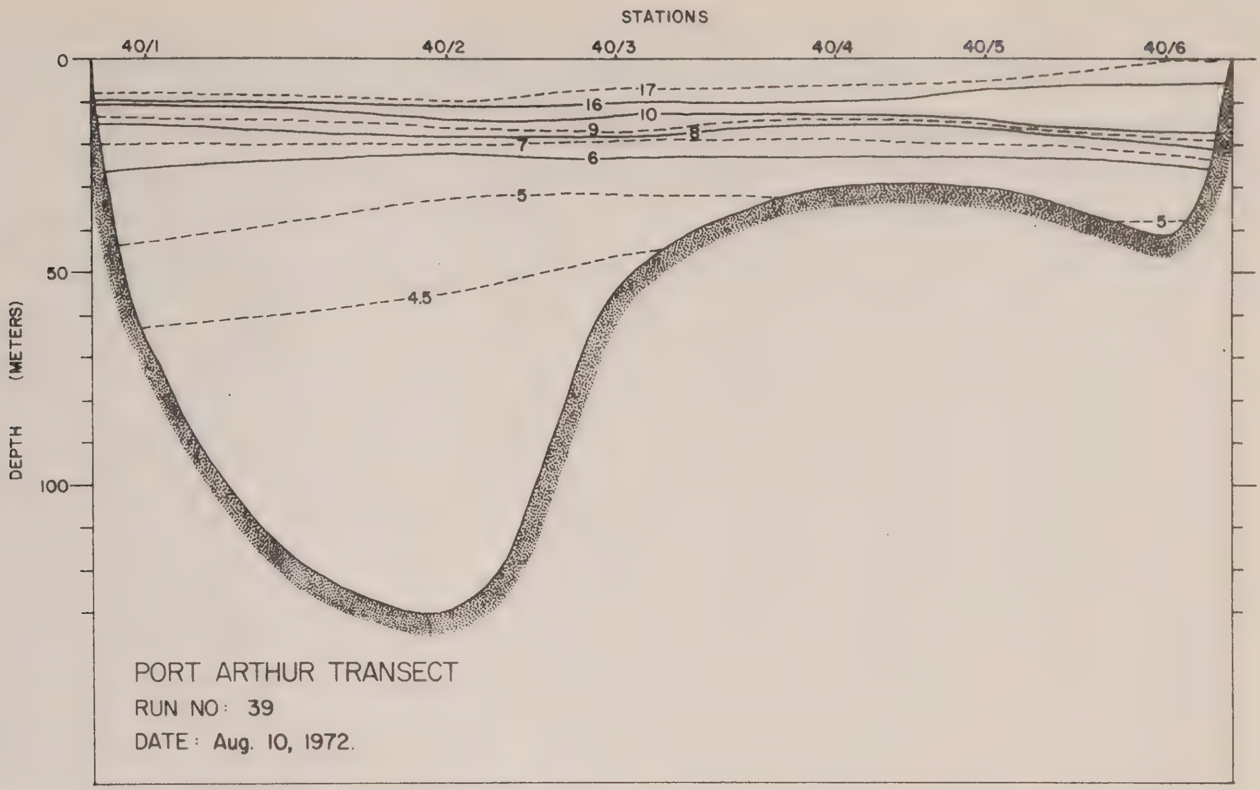

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
7
6.5
6
5.5
5
TOPLEY LANDING TRANSECT
RUN NO : 124
DATE : Oct. 26, 1972.

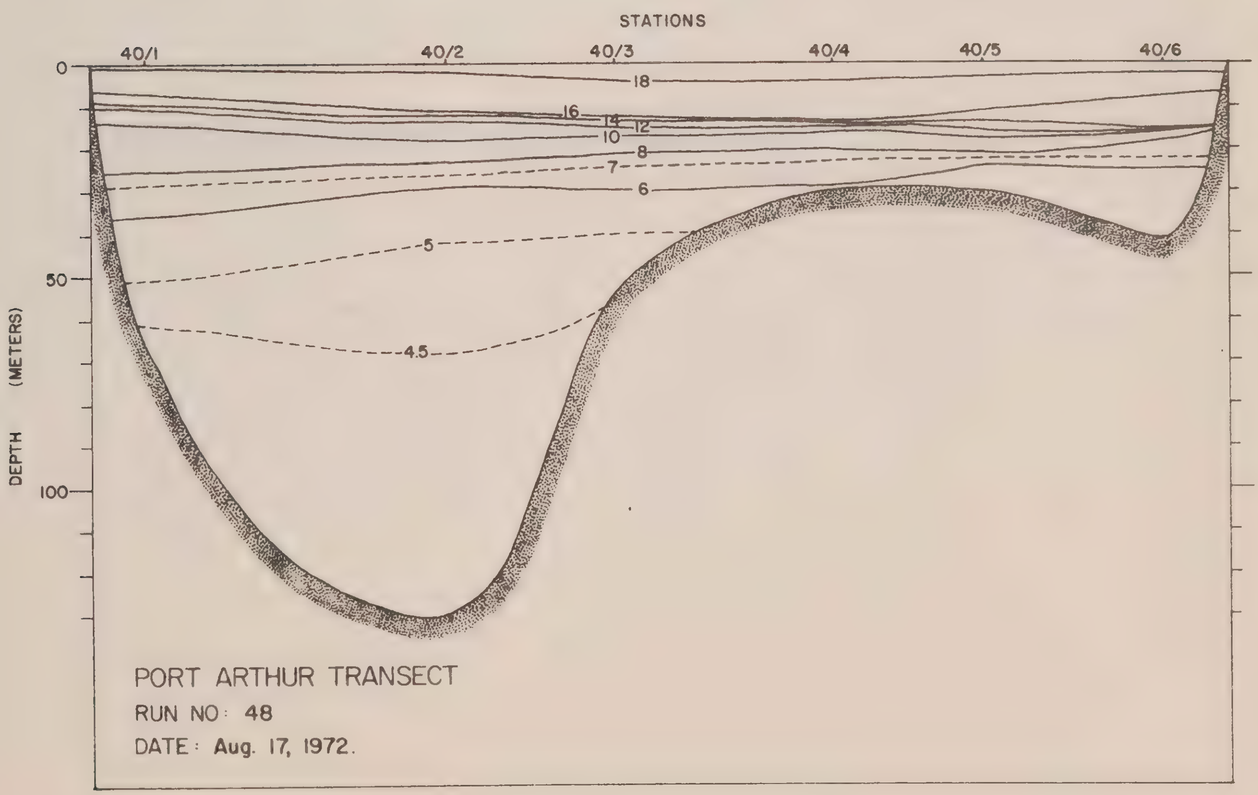

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
6.5
6
5.5
5
TOPLEY LANDING TRANSECT
RUN NO : 131
DATE : Nov. 2, 1972.

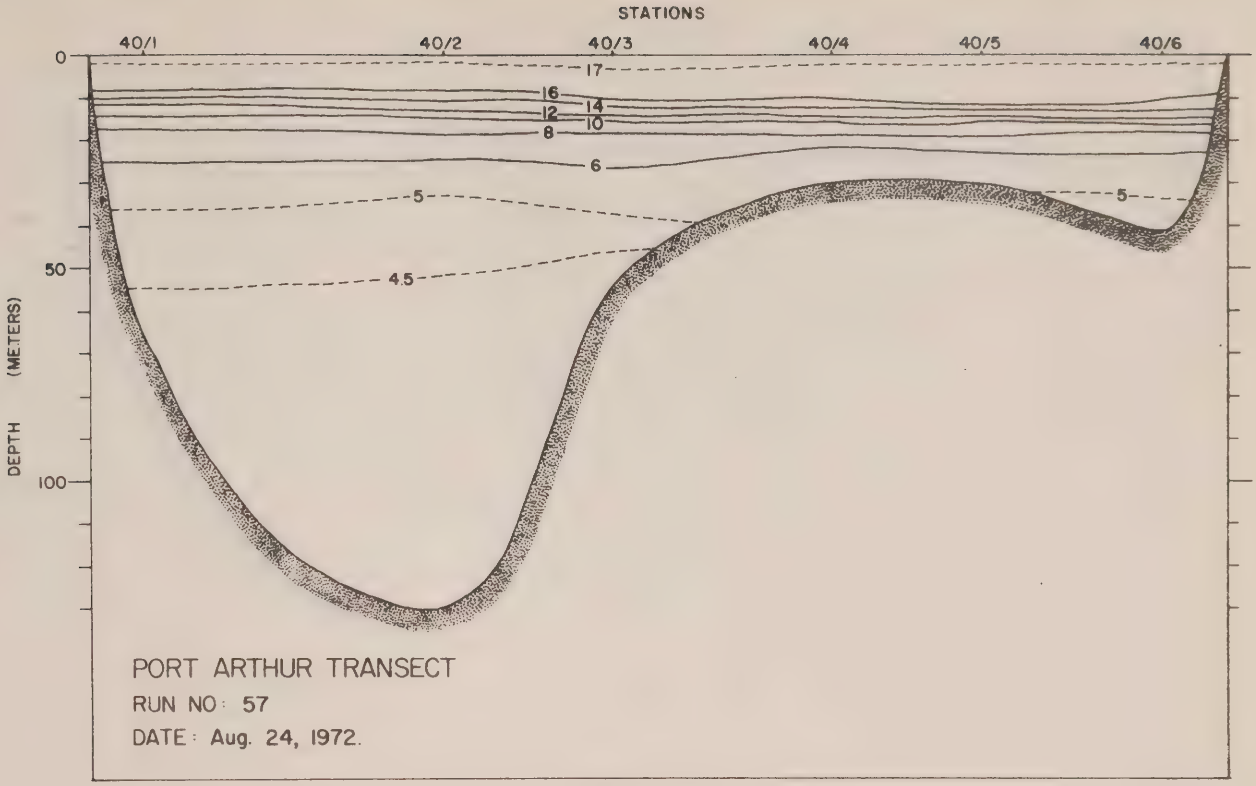

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
5.5
TOPLEY LANDING TRANSECT
RUN NO : 139
DATE : Nov. 9, 1972.


STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
5.5
TOPLEY LANDING TRANSECT
RUN NO : 148
DATE : Nov. 16, 1972.

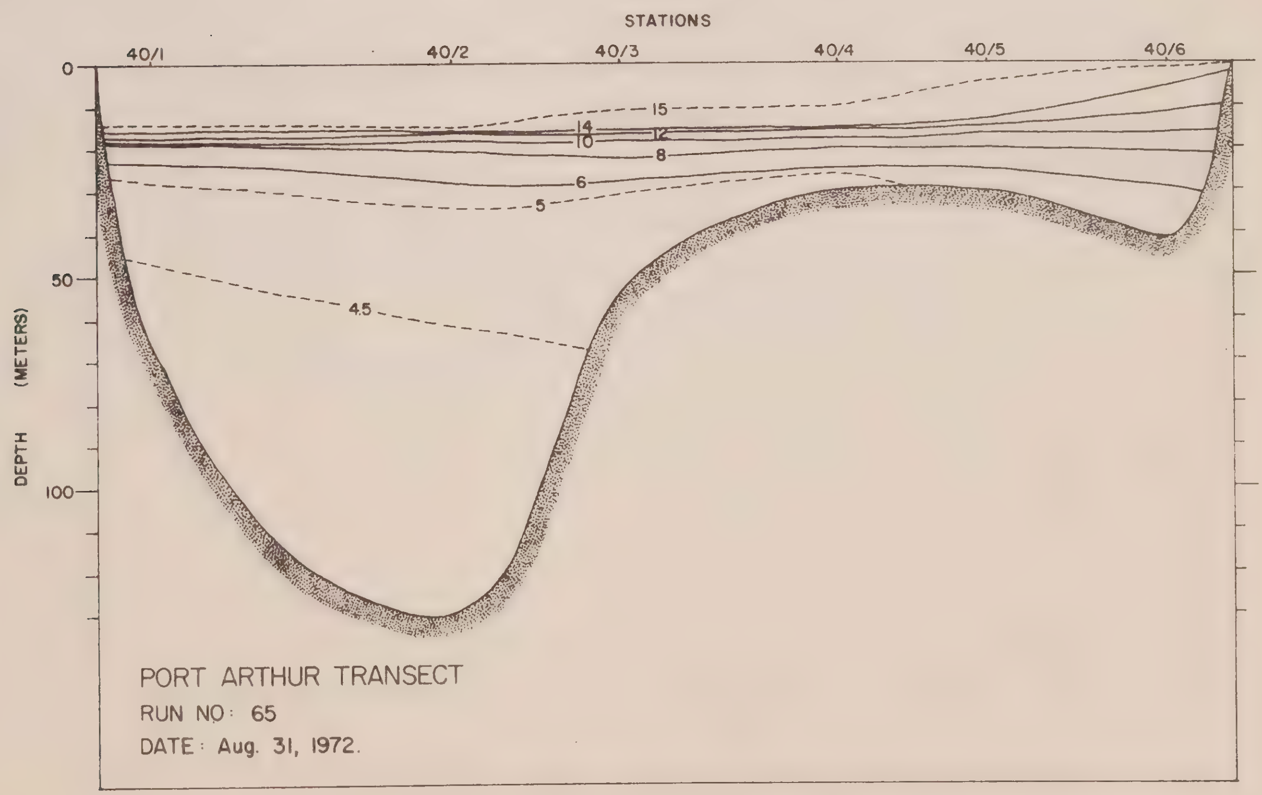
PORT ARTHUR TRANSECT (AUGUST 10 - NOVEMBER 16)


STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
17
16
10
9
8
7
6
5
4.5
PORT ARTHUR TRANSECT
RUN NO: 39
DATE: Aug. 10, 1972.

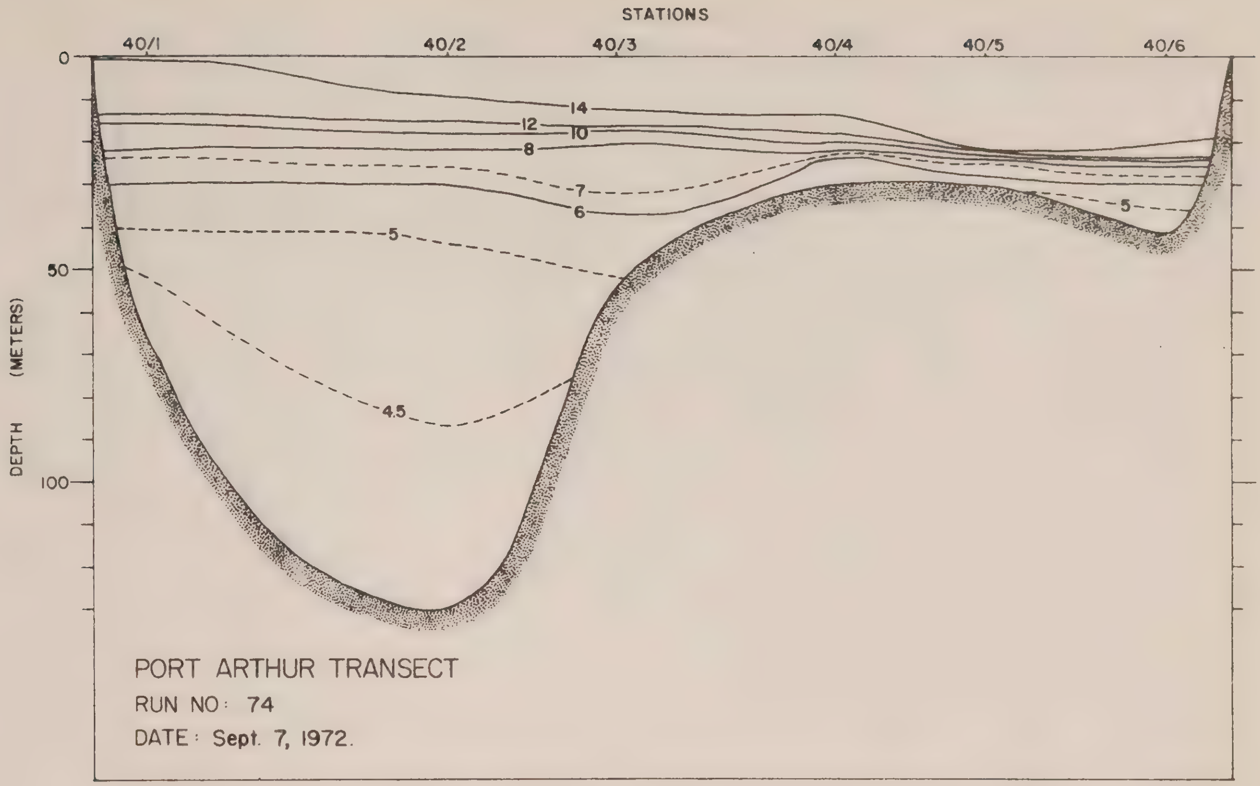

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
18
16
14
12
10
8
7
6
5
4.5
PORT ARTHUR TRANSECT
RUN NO: 48
DATE: Aug. 17, 1972.

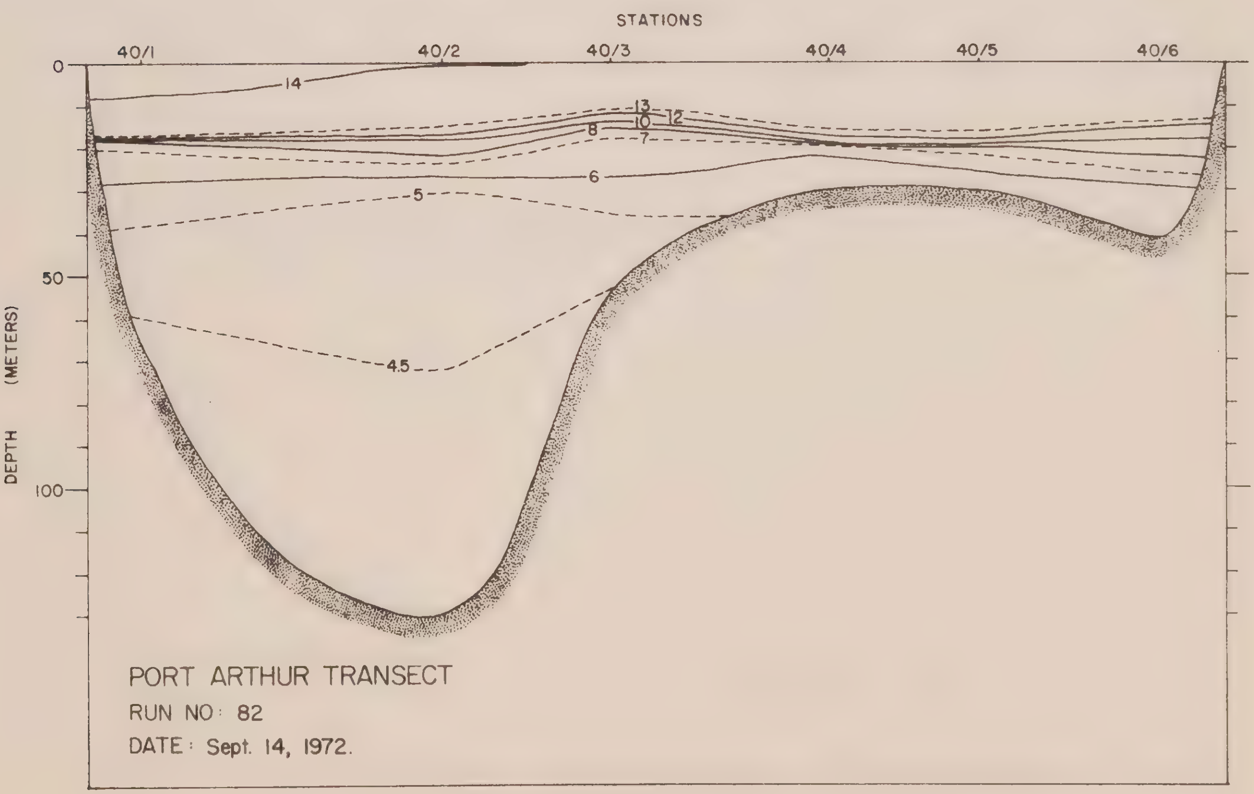


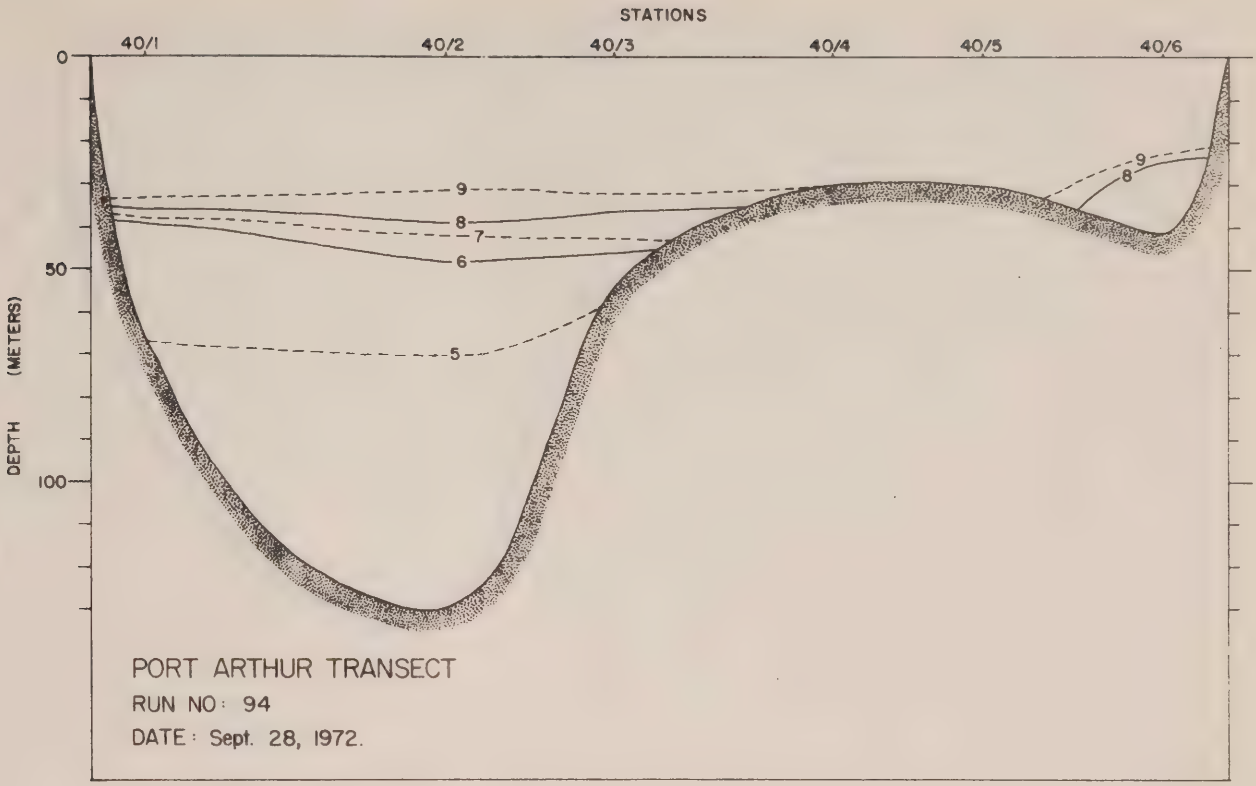
PORT ARTHUR TRANSECT
RUN NO: 57
DATE: Aug. 24, 1972.

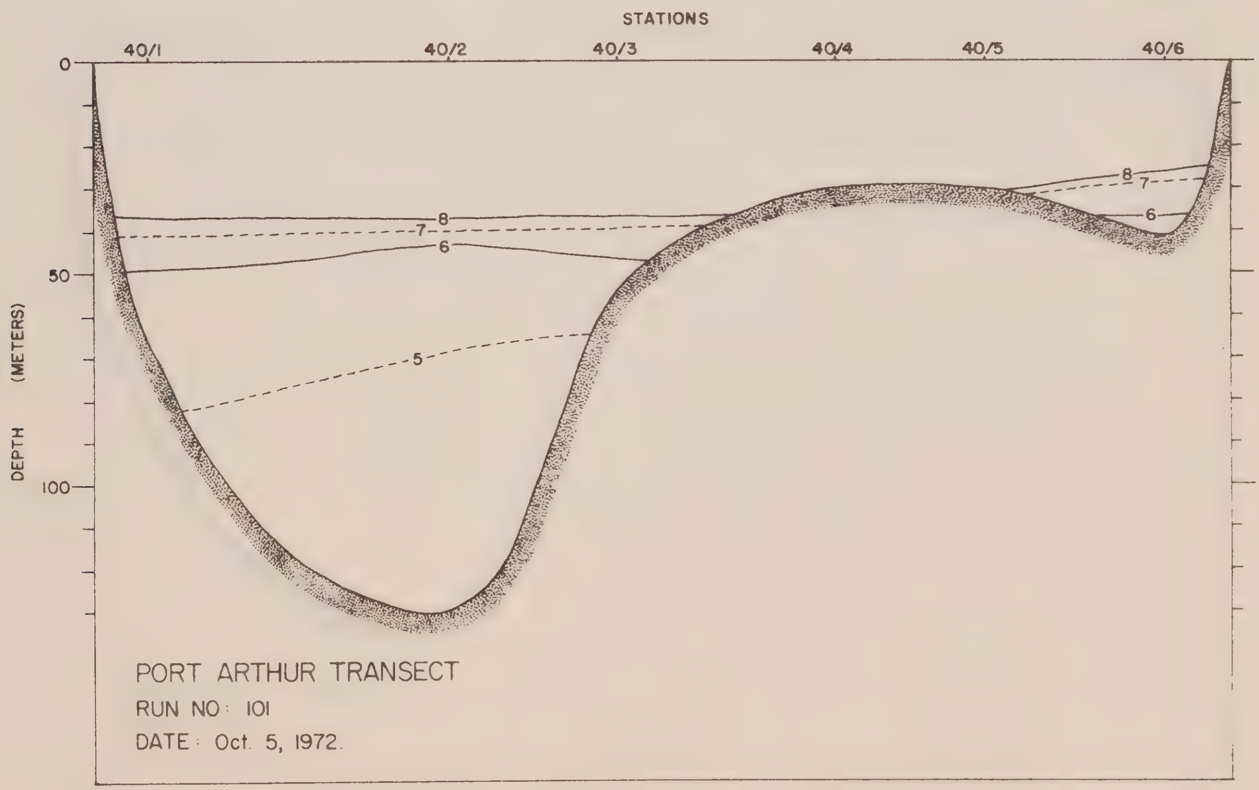


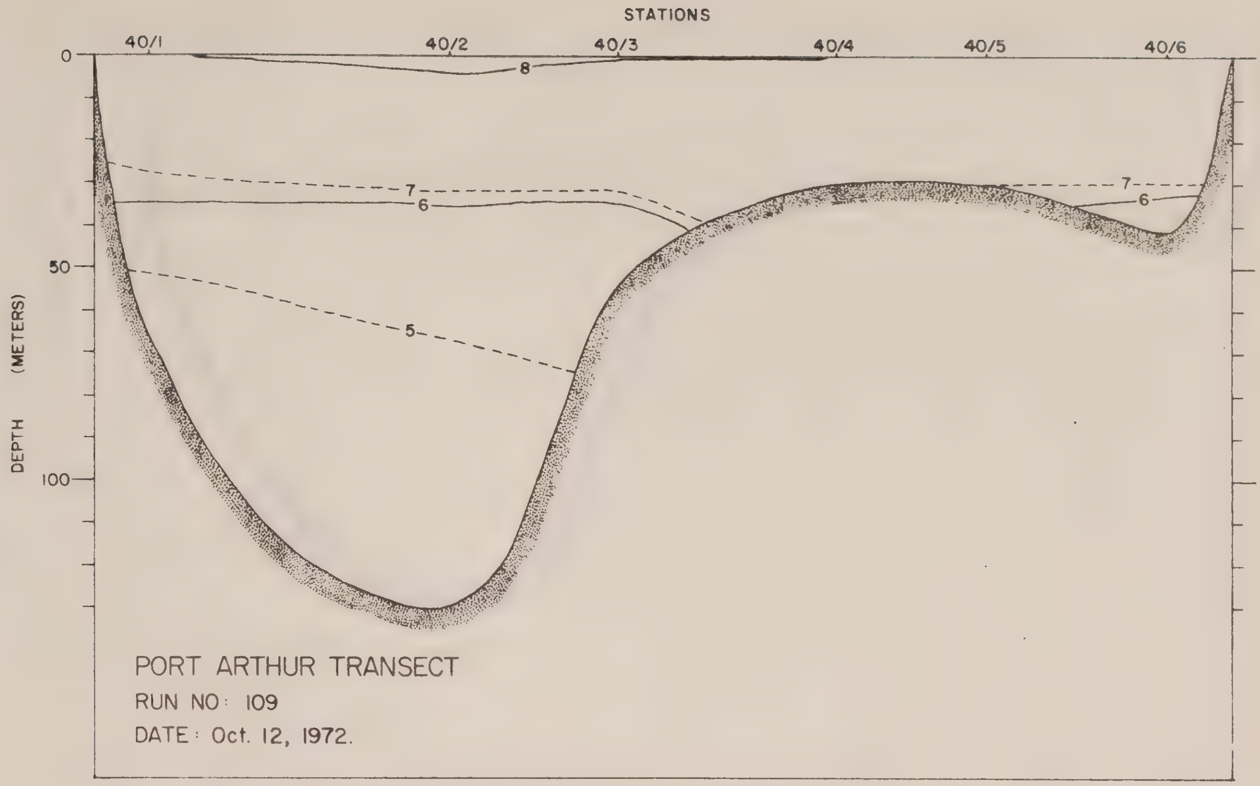
PORT ARTHUR TRANSECT
RUN NO: 65
DATE: Aug. 31, 1972.

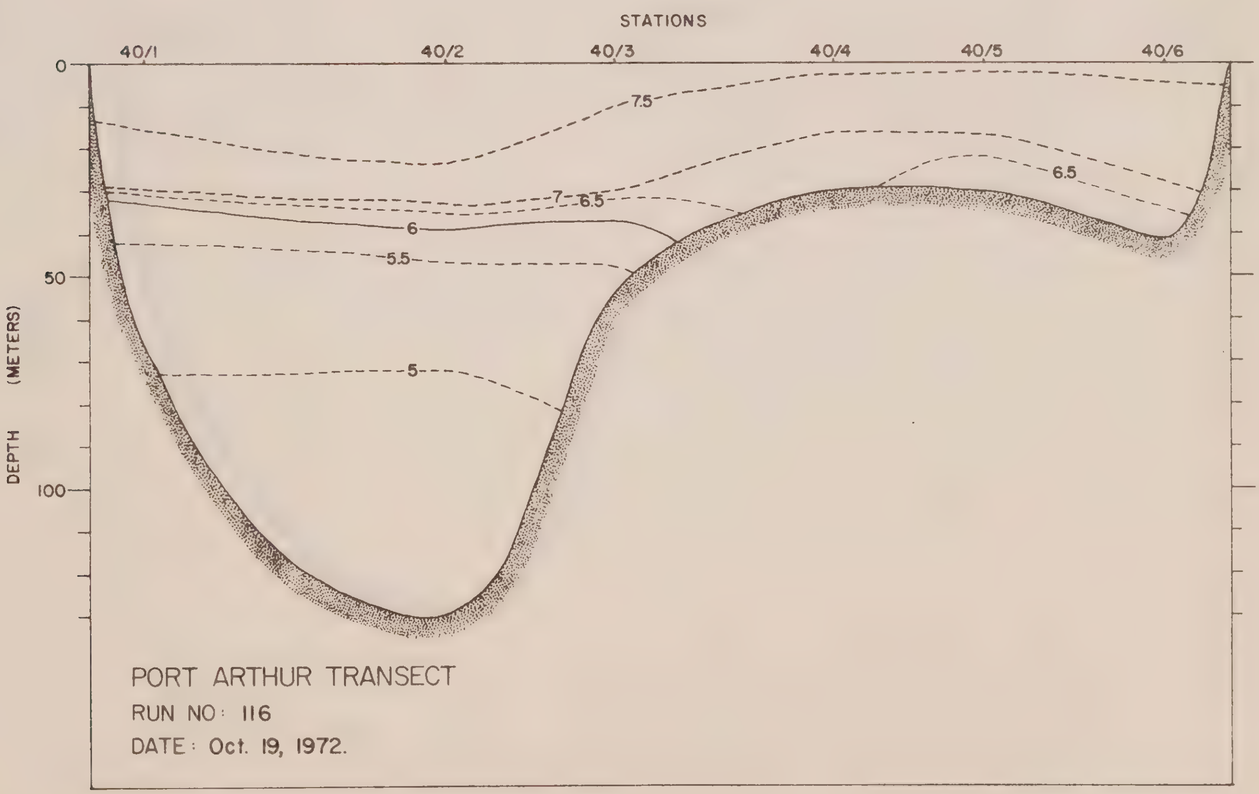

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
14
12
10
8
7
6
5
5
4.5
PORT ARTHUR TRANSECT
RUN NO: 74
DATE: Sept. 7, 1972.

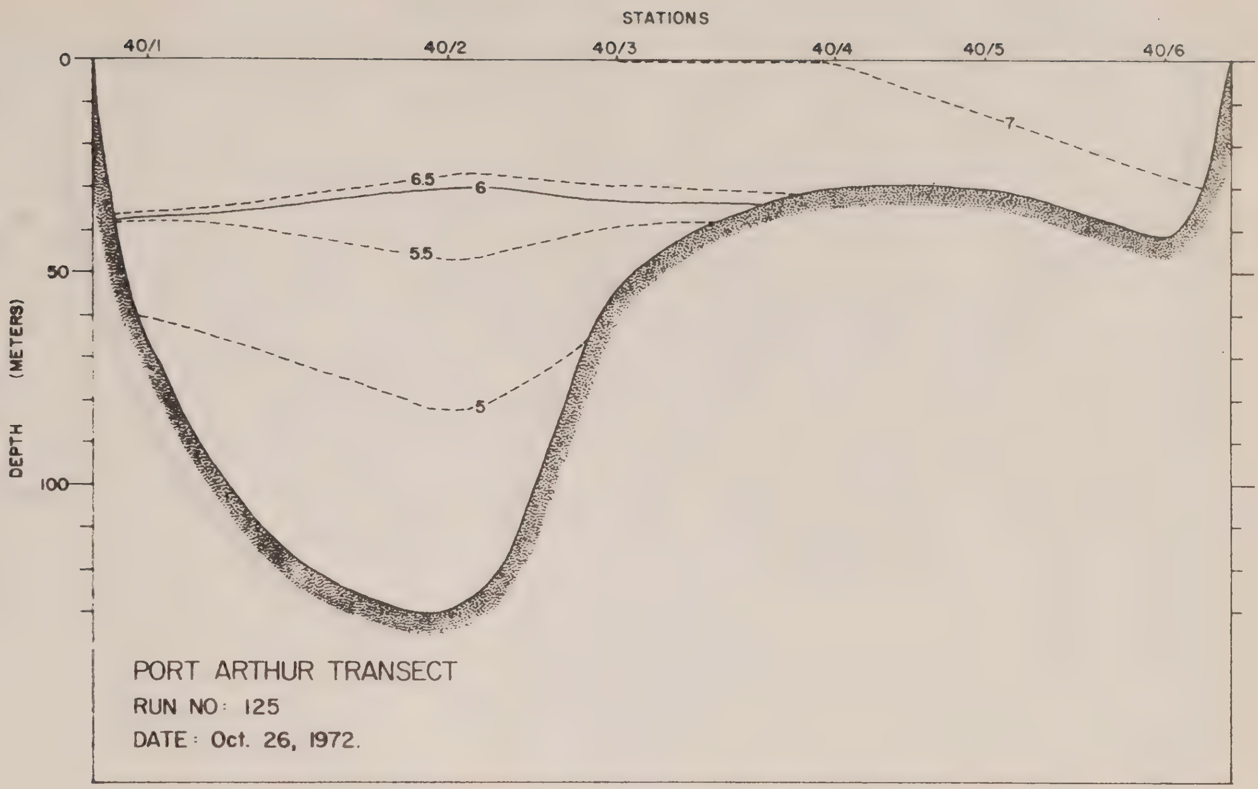

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
14
13
12
10
8
7
6
5
4.5
PORT ARTHUR TRANSECT
RUN NO: 82
DATE: Sept. 14, 1972.

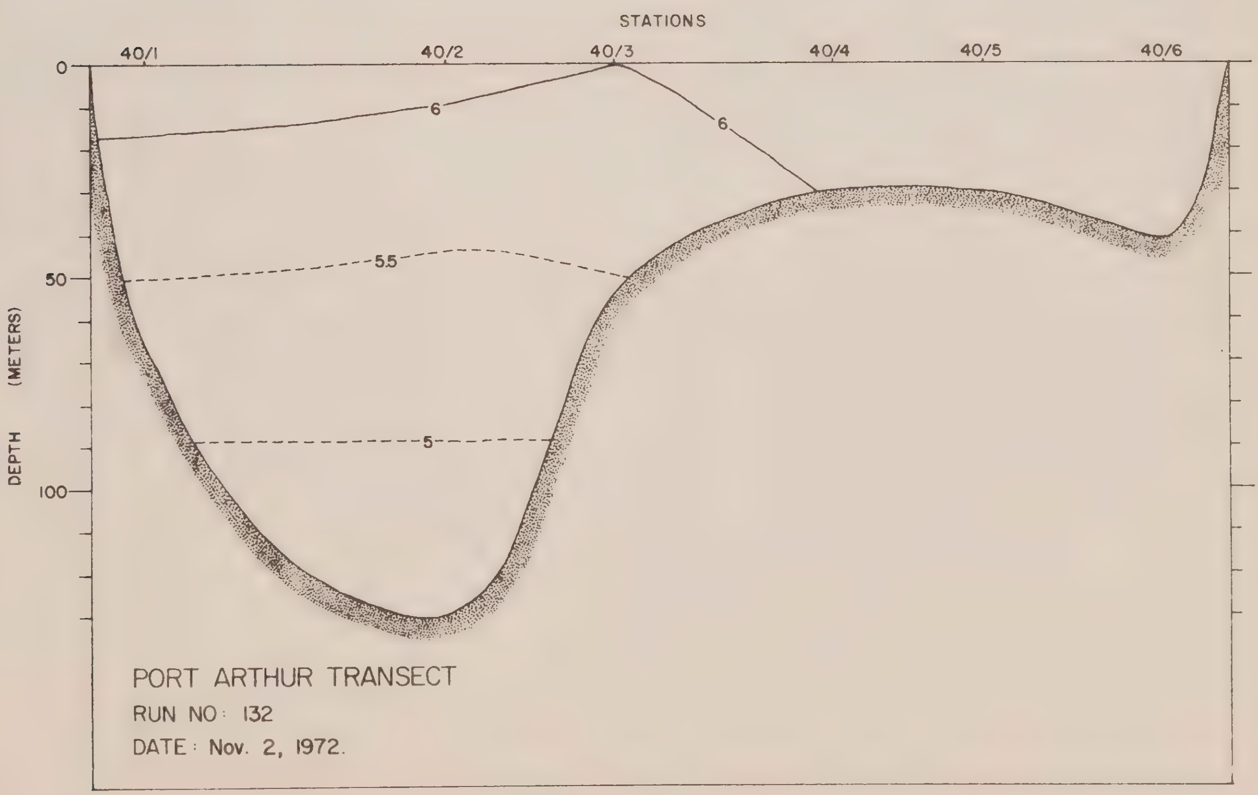

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
9
8
7
6
5
PORT ARTHUR TRANSECT
RUN NO: 94
DATE: Sept. 28, 1972.

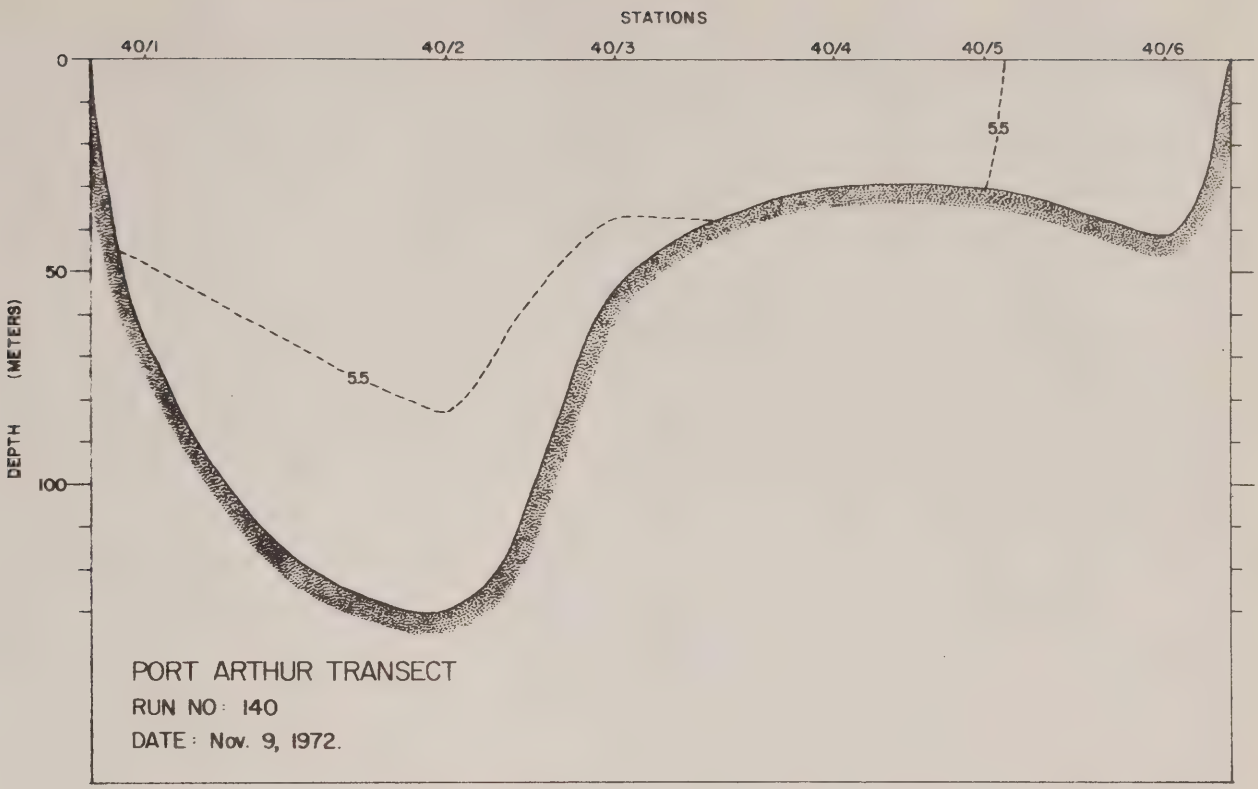

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
8
7
6
5
PORT ARTHUR TRANSECT
RUN NO: 101
DATE: Oct. 5, 1972.

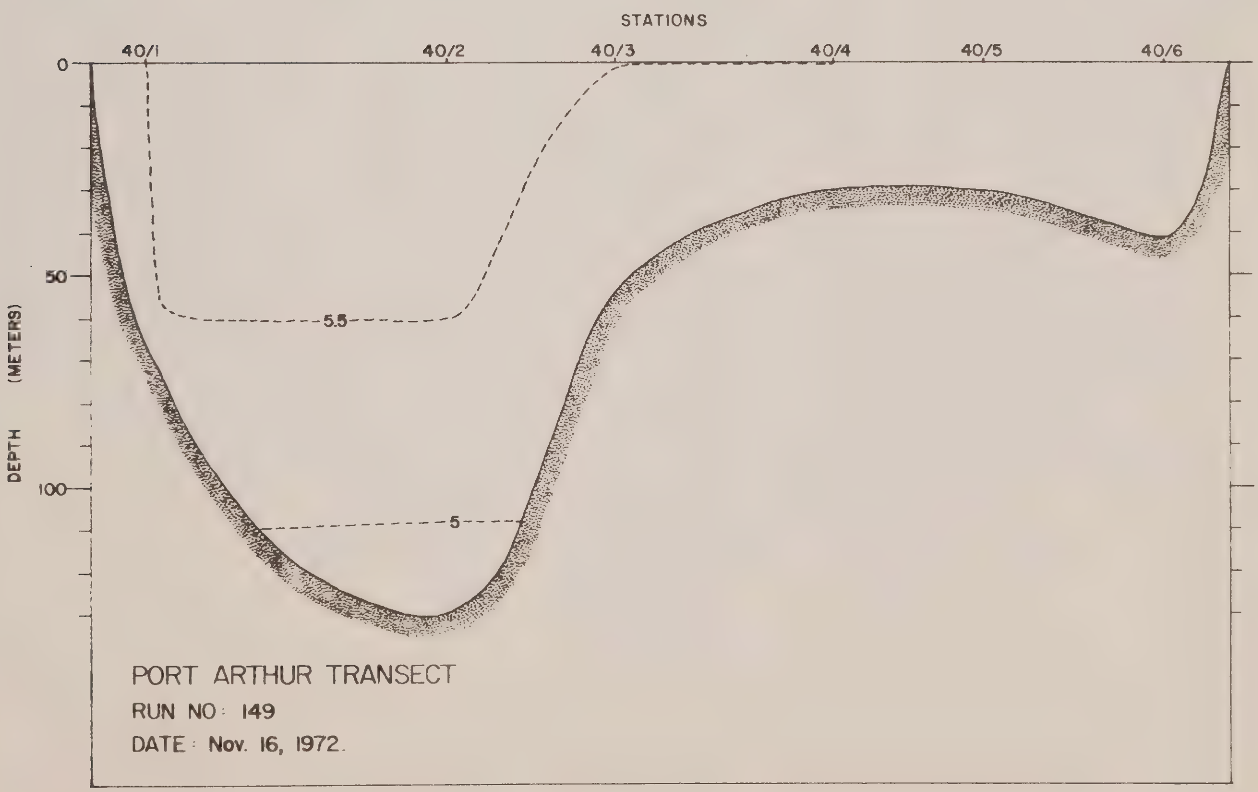

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
8
7
6
5
7
6
PORT ARTHUR TRANSECT
RUN NO: 109
DATE: Oct. 12, 1972.


STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
7.5
6.5
7
6.5
6
5.5
5
PORT ARTHUR TRANSECT
RUN NO: 116
DATE: Oct. 19, 1972.

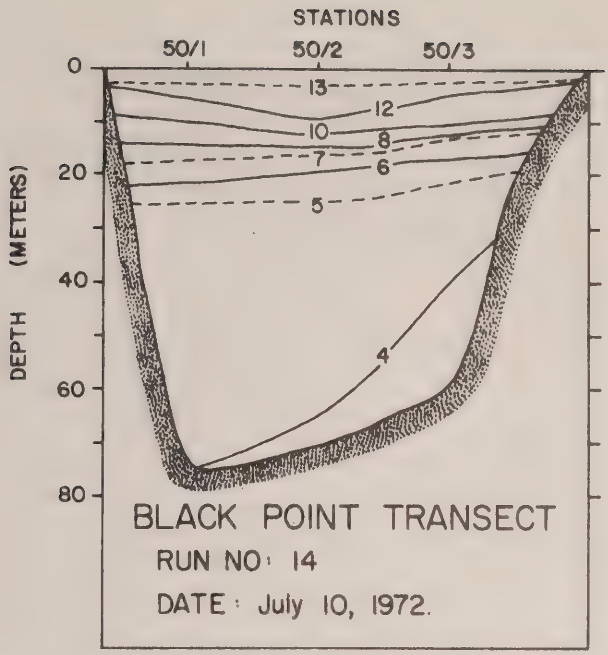

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
7
6.5
6
5.5
5
PORT ARTHUR TRANSECT
RUN NO: 125
DATE: Oct. 26, 1972.

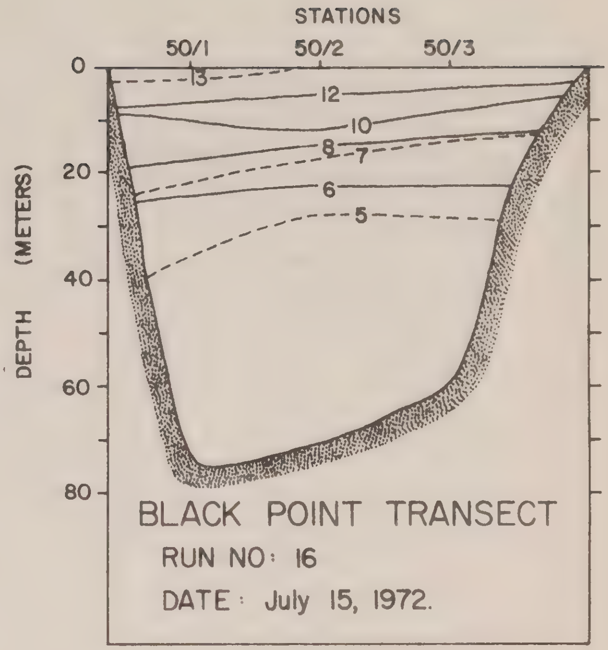

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
6
6
5.5
5
PORT ARTHUR TRANSECT
RUN NO: 132
DATE: Nov. 2, 1972.

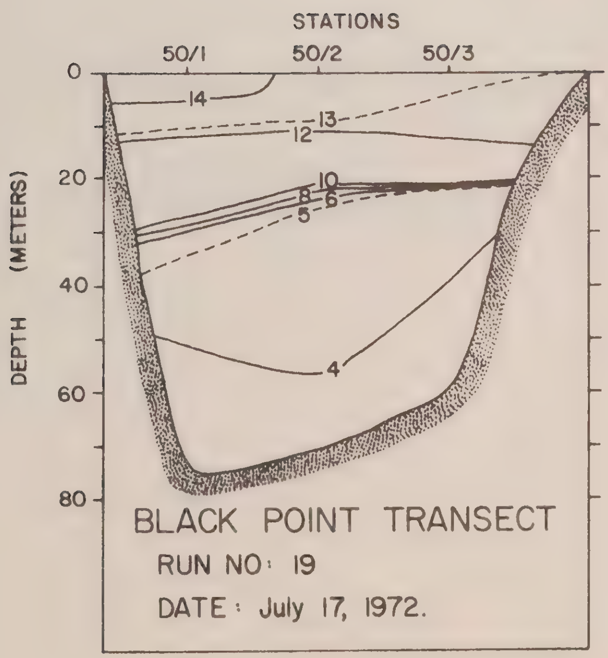

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
5.5
5.5
PORT ARTHUR TRANSECT
RUN NO: 140
DATE: Nov. 9, 1972.

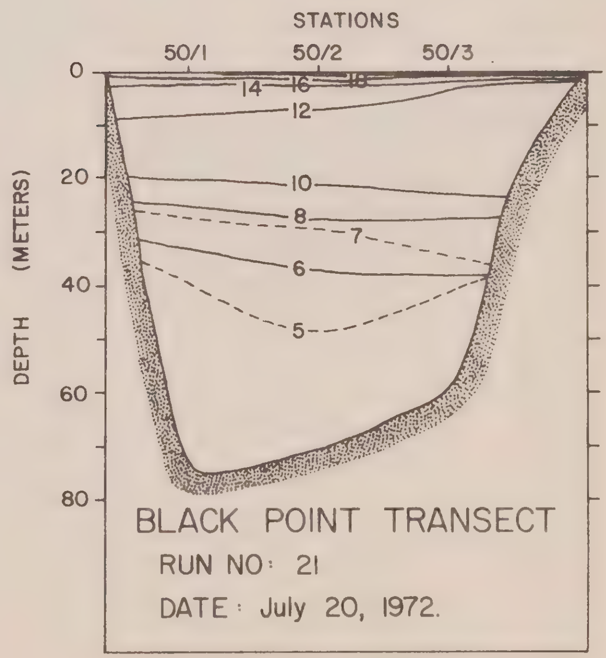

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
5.5
5
PORT ARTHUR TRANSECT
RUN NO: 149
DATE: Nov. 16, 1972.

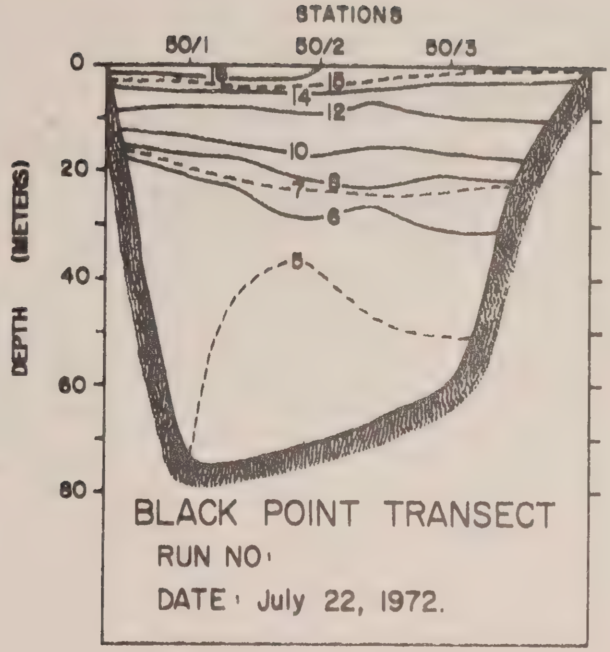
BLACK POINT TRANSECT (JULY 10 - NOVEMBER 17)

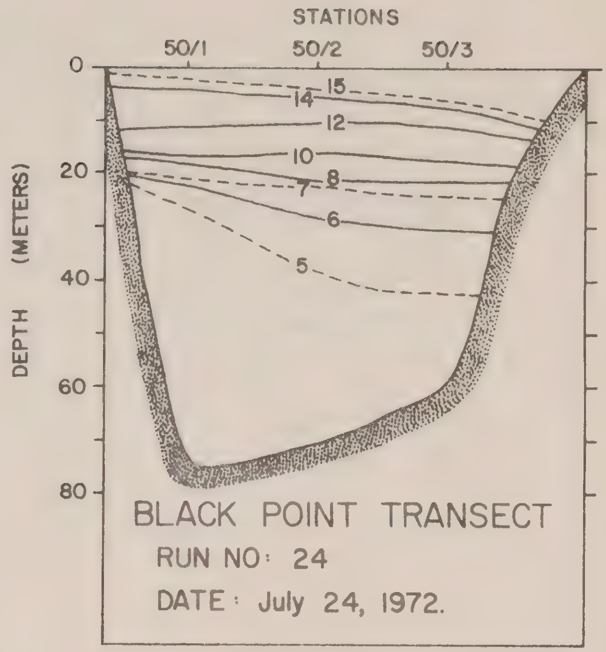

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
13
12
10
8
7
6
5
4
BLACK POINT TRANSECT
RUN NO: 14
DATE: July 10, 1972.

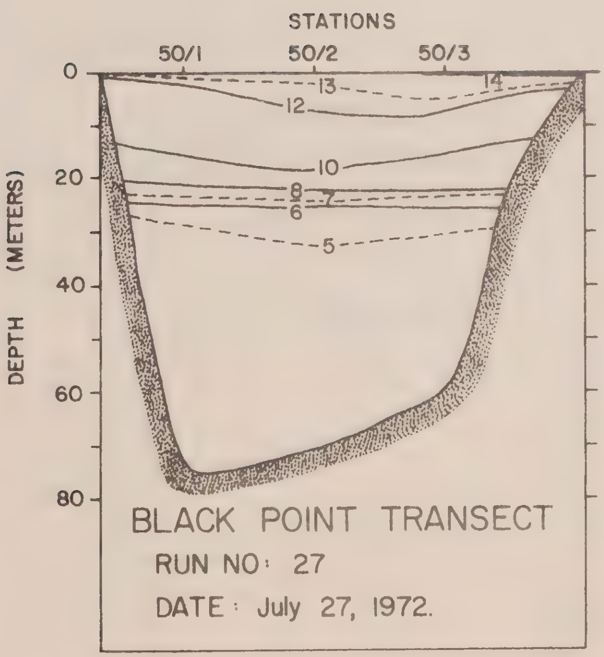

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
13
12
10
8
7
6
5
BLACK POINT TRANSECT
RUN NO: 16
DATE: July 15, 1972.

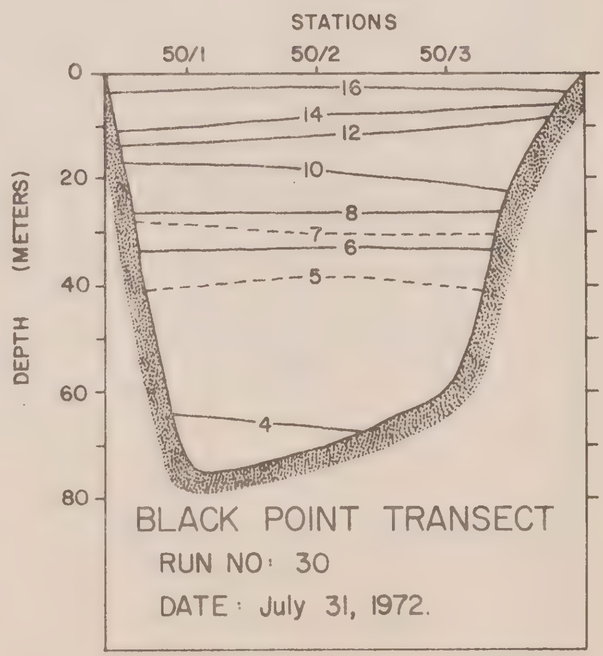

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
14
13
12
10
8
6
5
4
BLACK POINT TRANSECT
RUN NO: 19
DATE: July 17, 1972.

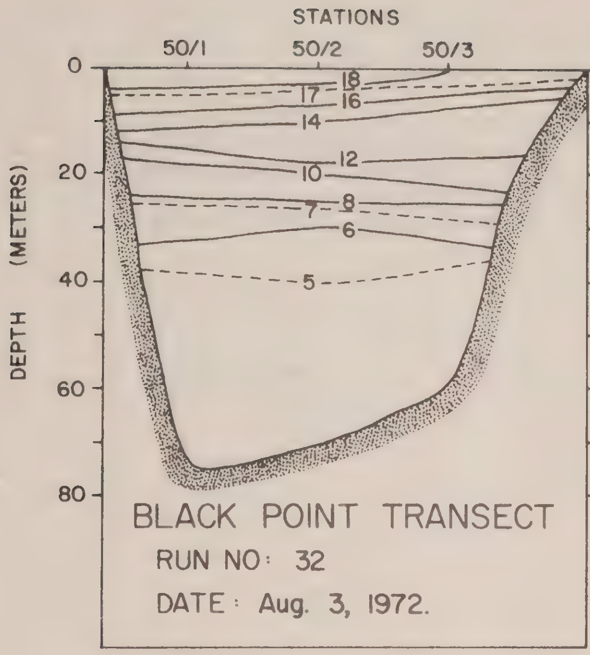

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
14
16
18
12
10
8
7
6
5
BLACK POINT TRANSECT
RUN NO: 21
DATE: July 20, 1972.


STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
15
14
12
10
8
7
6
5
BLACK POINT TRANSECT
RUN NO:
DATE: July 22, 1972.

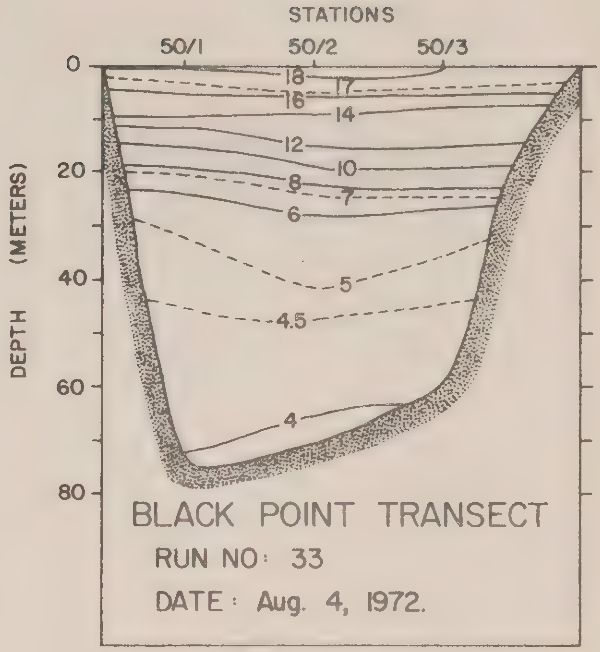

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
15
14
12
10
8
7
6
5
BLACK POINT TRANSECT
RUN NO: 24
DATE: July 24, 1972.


STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
13
14
12
10
8
7
6
5
BLACK POINT TRANSECT
RUN NO: 27
DATE: July 27, 1972.

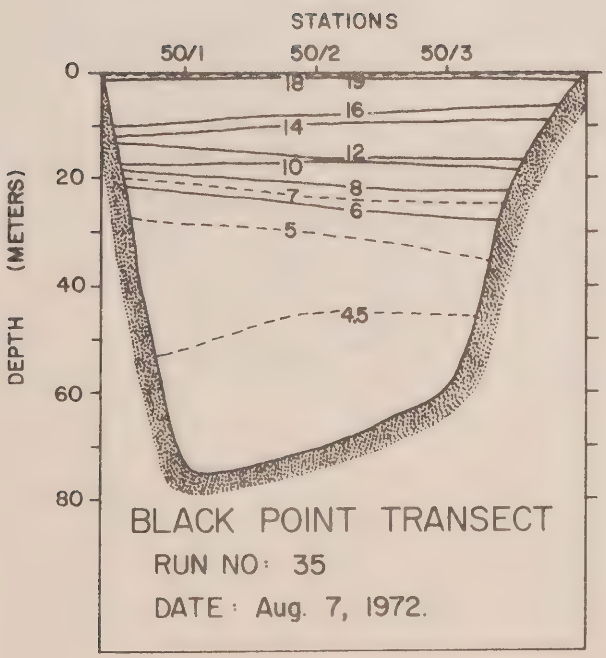

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
16
14
12
10
8
7
6
5
4
BLACK POINT TRANSECT
RUN NO: 30
DATE: July 31, 1972.



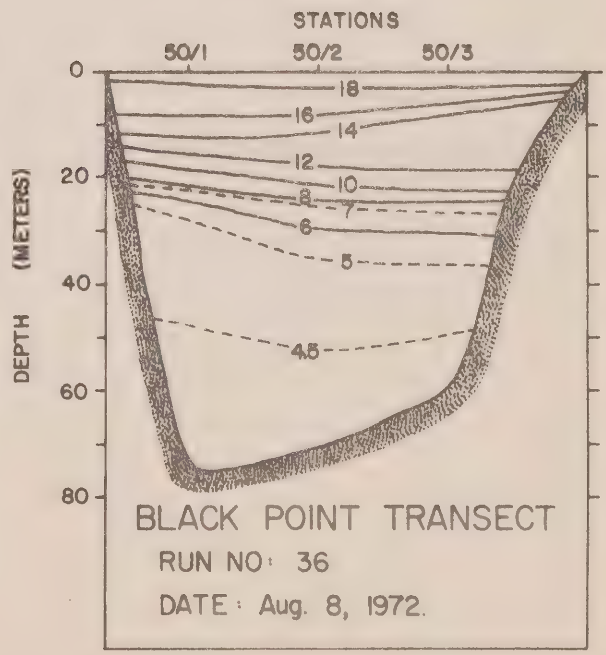
BLACK POINT TRANSECT
RUN NO: 32
DATE: Aug. 3, 1972.



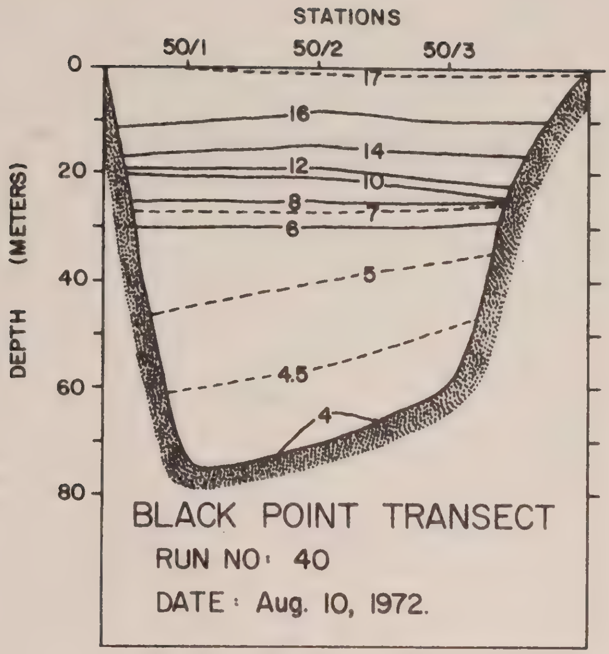
BLACK POINT TRANSECT
RUN NO: 33
DATE: Aug. 4, 1972.

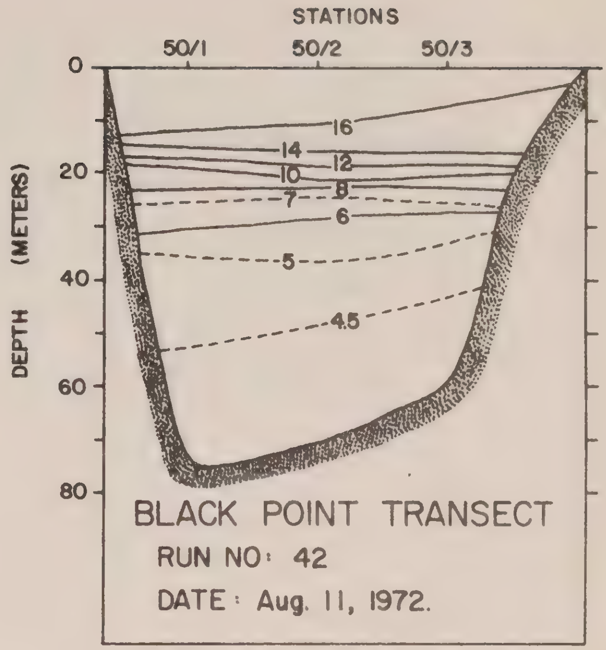


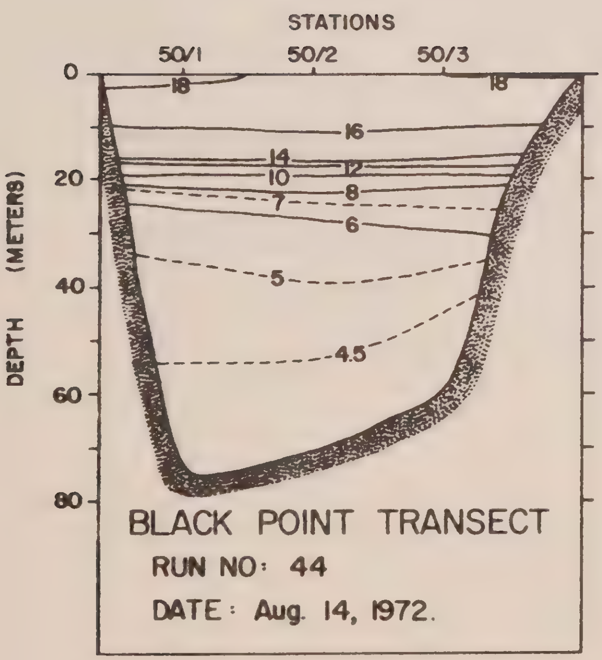
BLACK POINT TRANSECT
RUN NO: 35
DATE: Aug. 7, 1972.

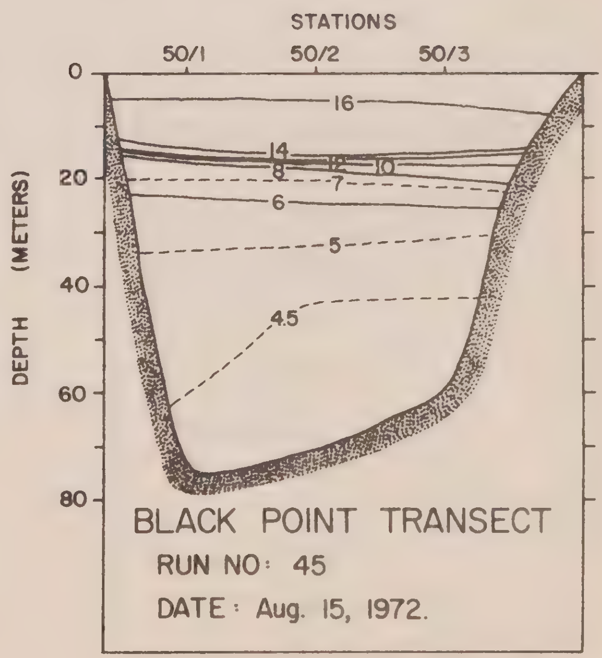


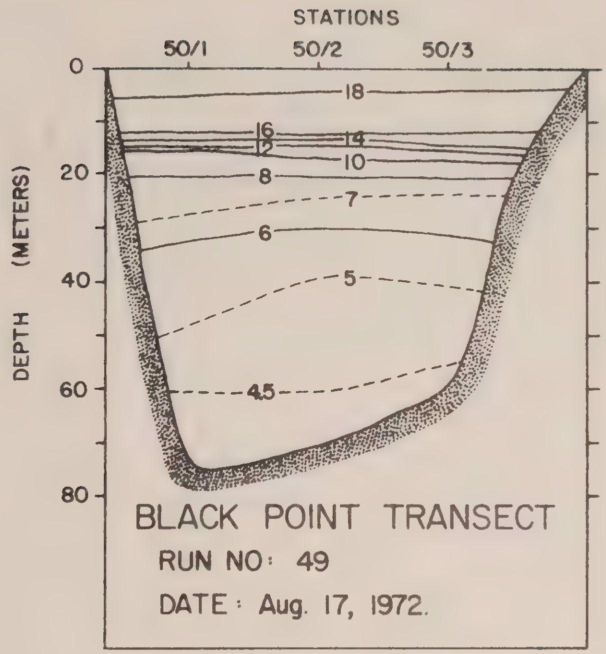
BLACK POINT TRANSECT
RUN NO: 36
DATE: Aug. 8, 1972.

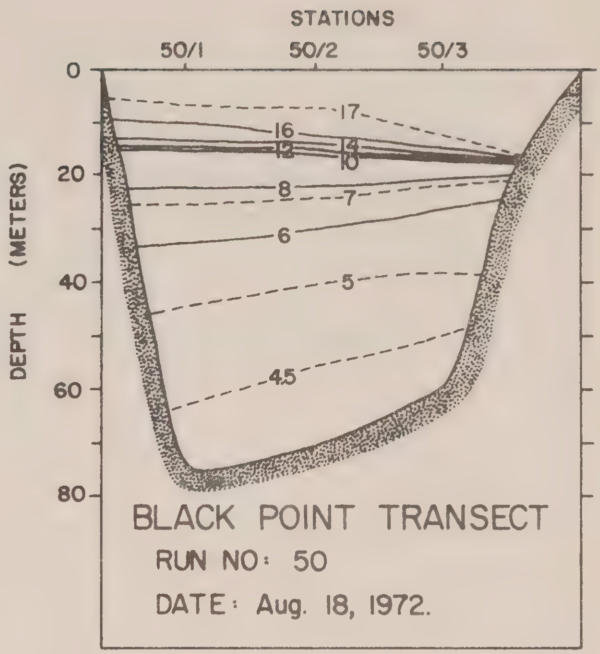

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
17
16
14
12
10
8
7
6
5
4.5
4
BLACK POINT TRANSECT
RUN NO: 40
DATE: Aug. 10, 1972.

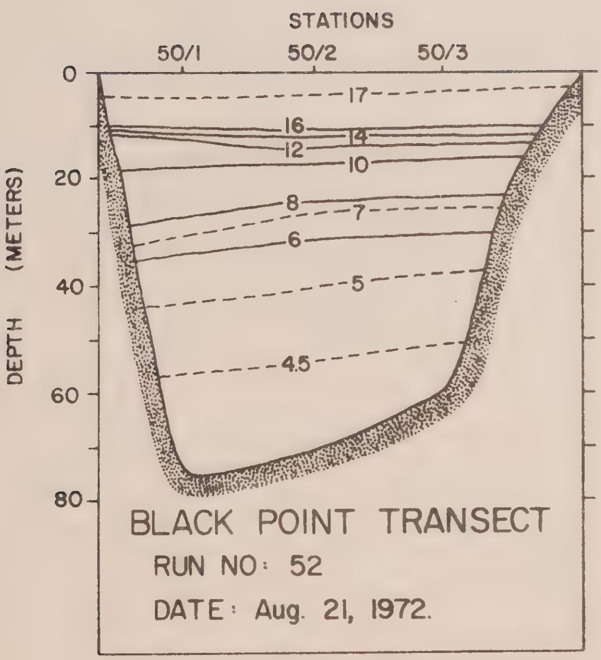

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
16
14
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 42
DATE: Aug. 11, 1972.

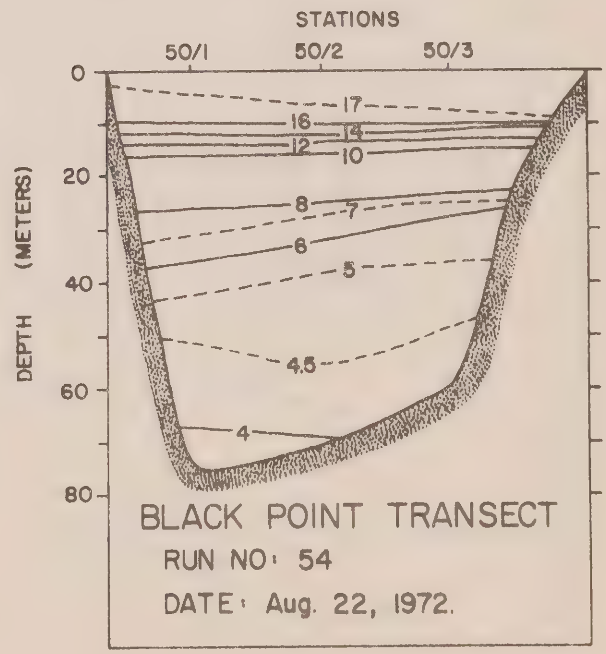

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
18
18
16
14
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 44
DATE: Aug. 14, 1972.

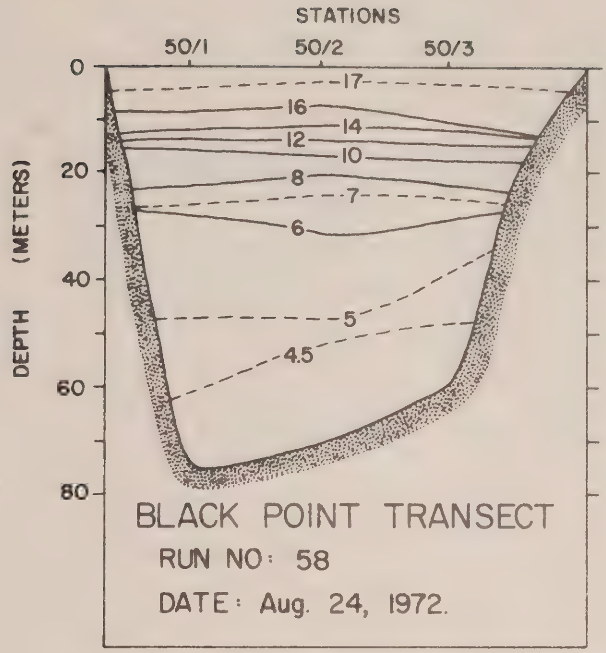

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
16
14
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 45
DATE: Aug. 15, 1972.

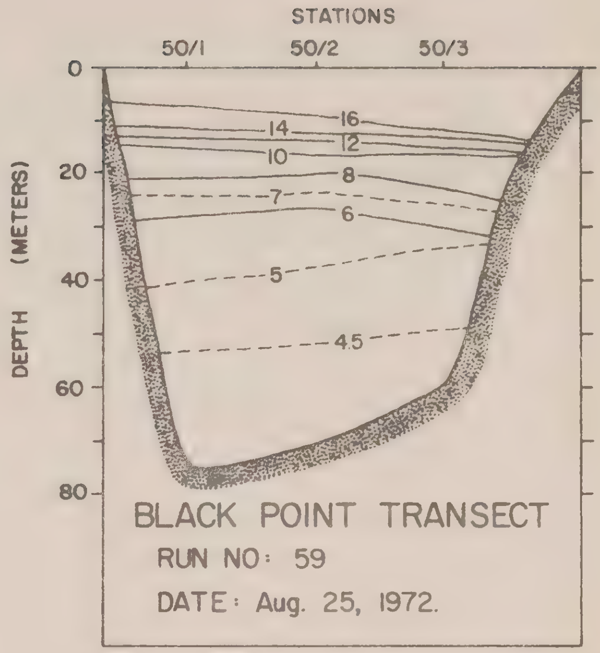

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
18
16
14
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 49
DATE: Aug. 17, 1972.

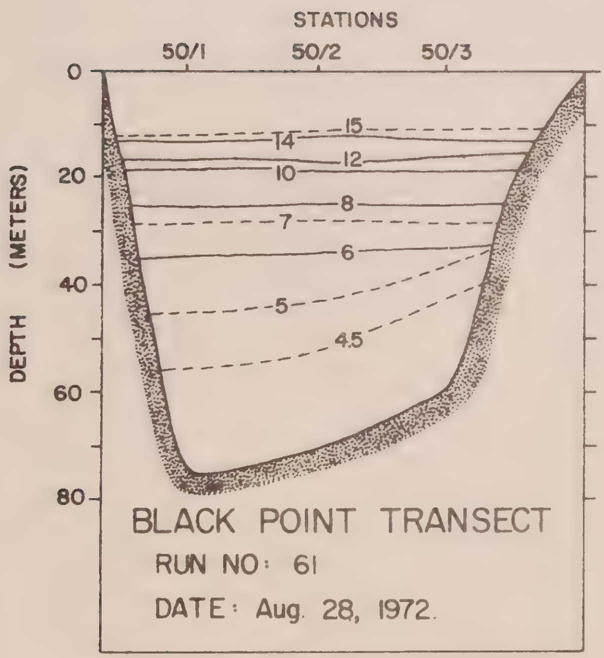

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
17
16
14
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 50
DATE: Aug. 18, 1972.

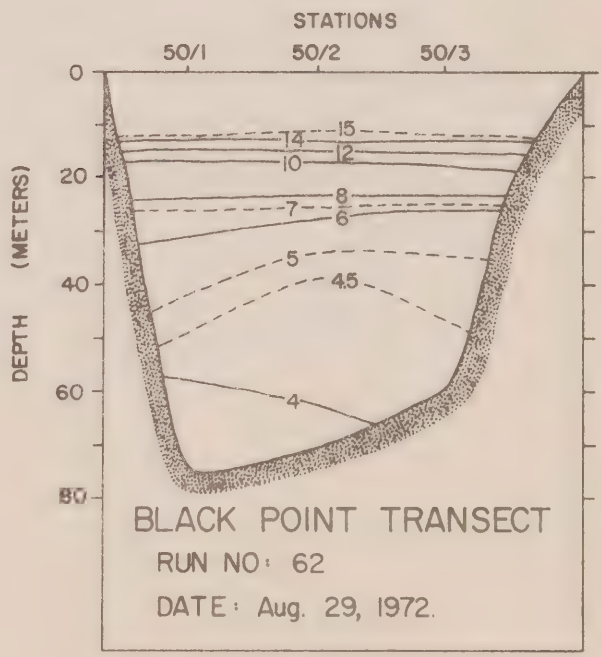

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
17
16
14
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 52
DATE: Aug. 21, 1972.

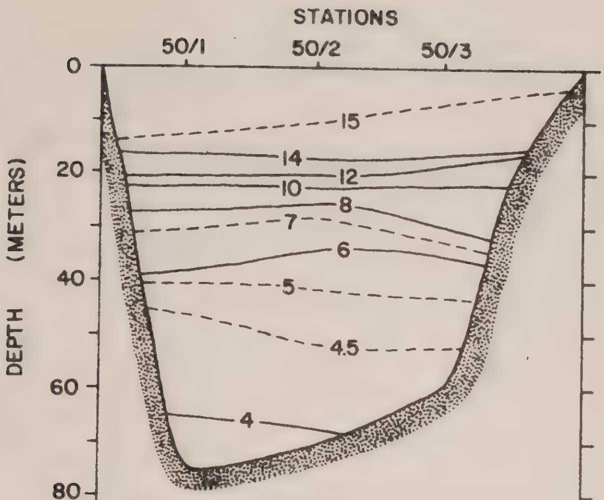

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
17
16
14
12
10
8
7
6
5
4.5
4
BLACK POINT TRANSECT
RUN NO: 54
DATE: Aug. 22, 1972.


STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
17
16
14
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 58
DATE: Aug. 24, 1972.

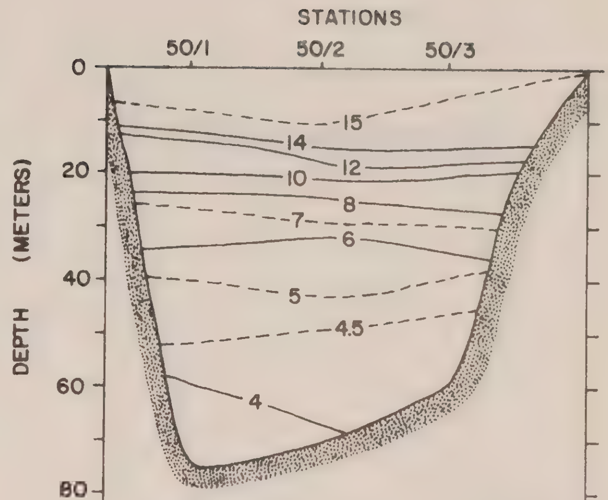

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
16
14
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 59
DATE: Aug. 25, 1972.


STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
15
14
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 61
DATE: Aug. 28, 1972.

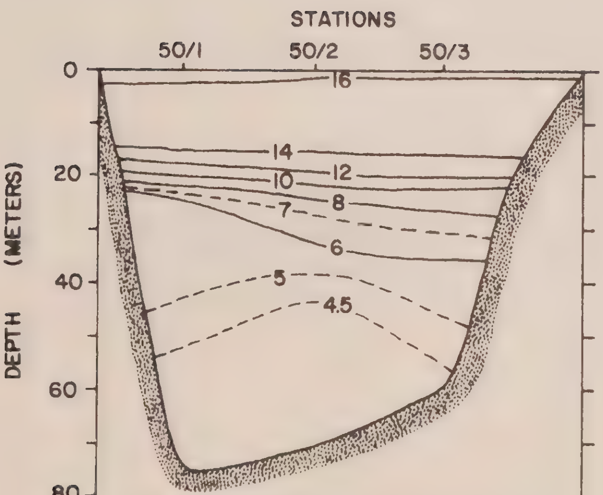

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
15
14
12
10
8
7
6
5
4.5
4
BLACK POINT TRANSECT
RUN NO: 62
DATE: Aug. 29, 1972.



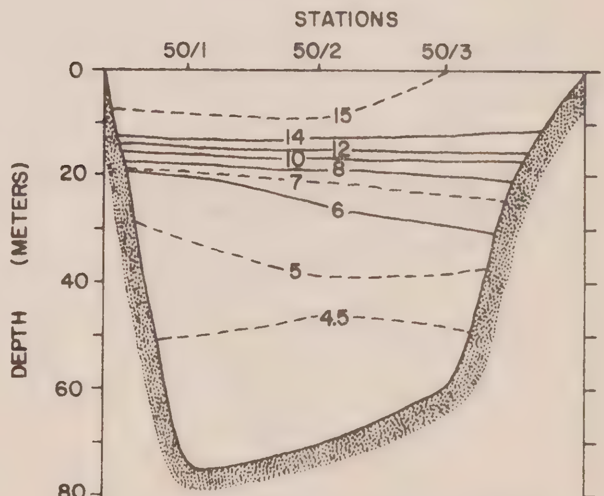
BLACK POINT TRANSECT
RUN NO: 66
DATE: Aug. 31, 1972.



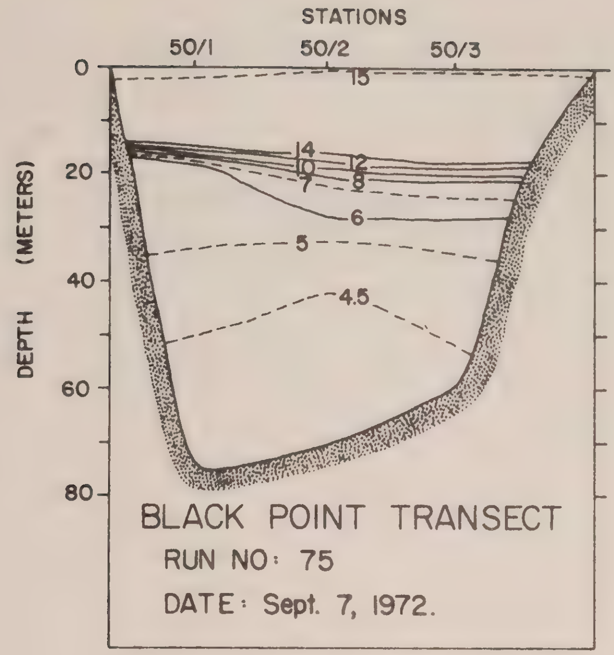
BLACK POINT TRANSECT
RUN NO: 67
DATE: Sept. 1, 1972.

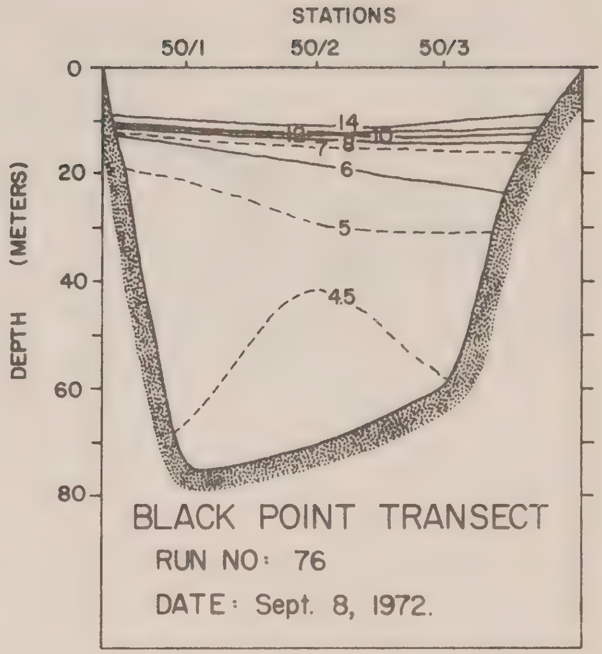


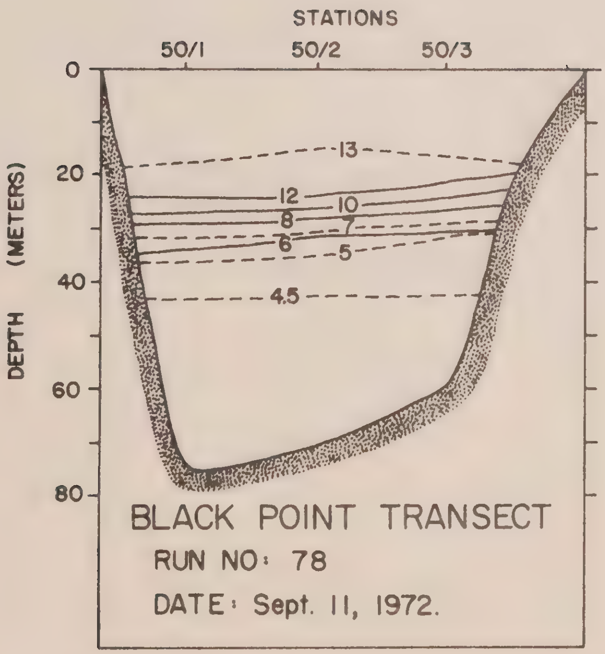
BLACK POINT TRANSECT
RUN NO: 69
DATE: Sept. 4, 1972.

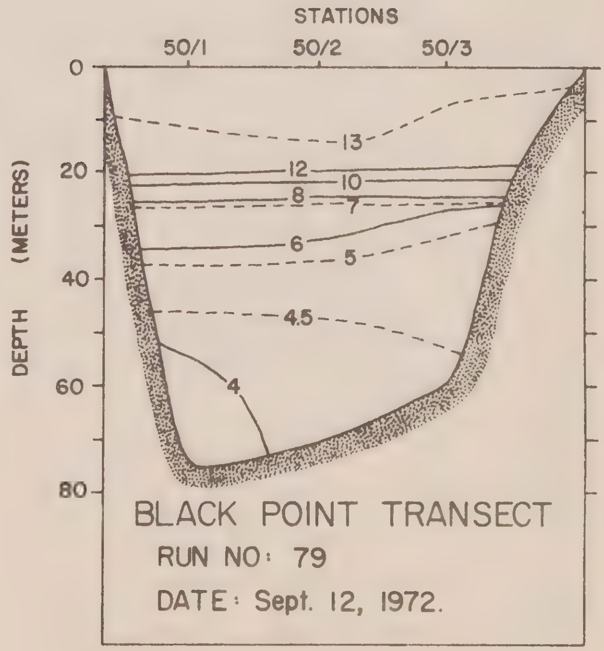


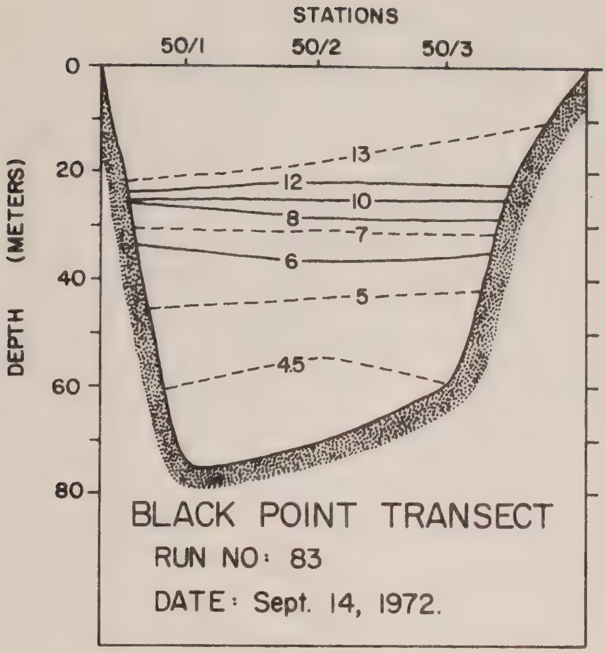
BLACK POINT TRANSECT
RUN NO: 71
DATE: Sept. 5, 1972.

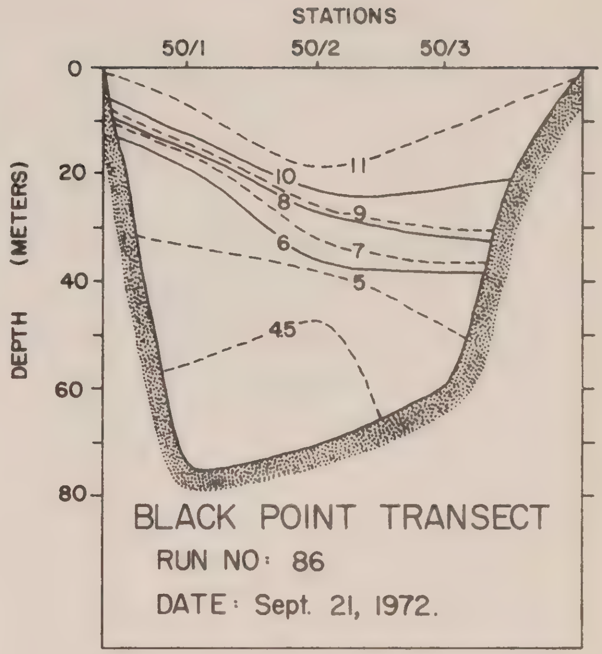

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
15
14
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 75
DATE: Sept. 7, 1972.

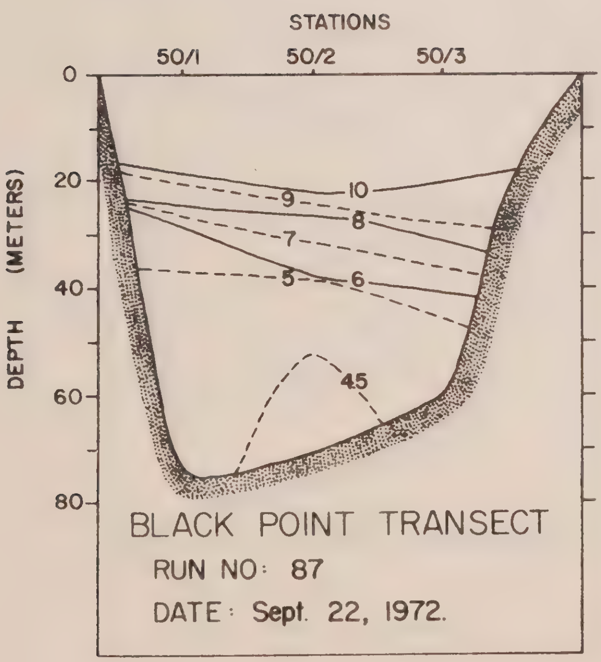

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
14
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 76
DATE: Sept. 8, 1972.

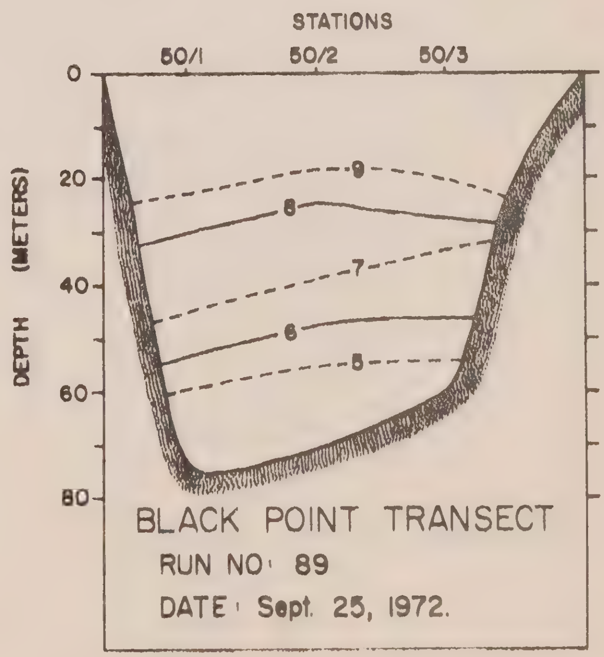

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
13
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 78
DATE: Sept. 11, 1972.

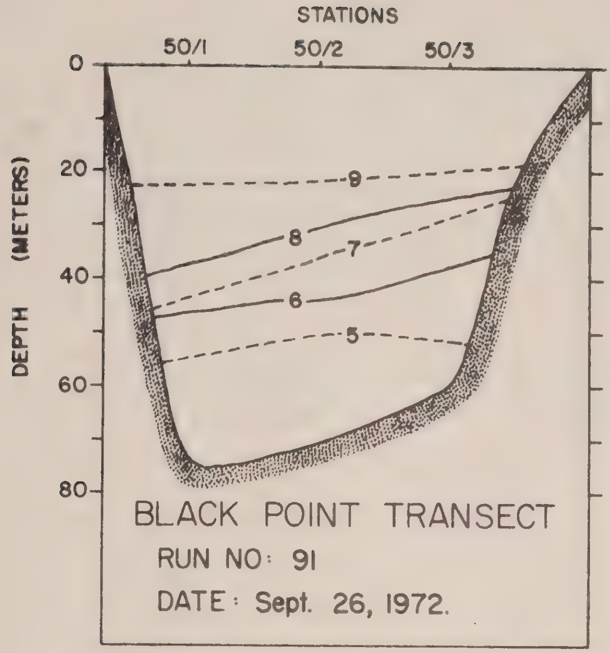

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
13
12
10
8
7
6
5
4.5
4
BLACK POINT TRANSECT
RUN NO: 79
DATE: Sept. 12, 1972.

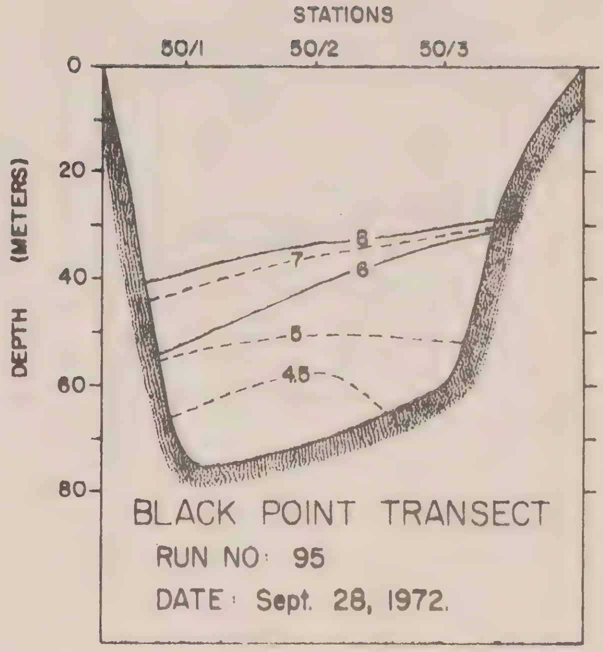

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
13
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 83
DATE: Sept. 14, 1972.

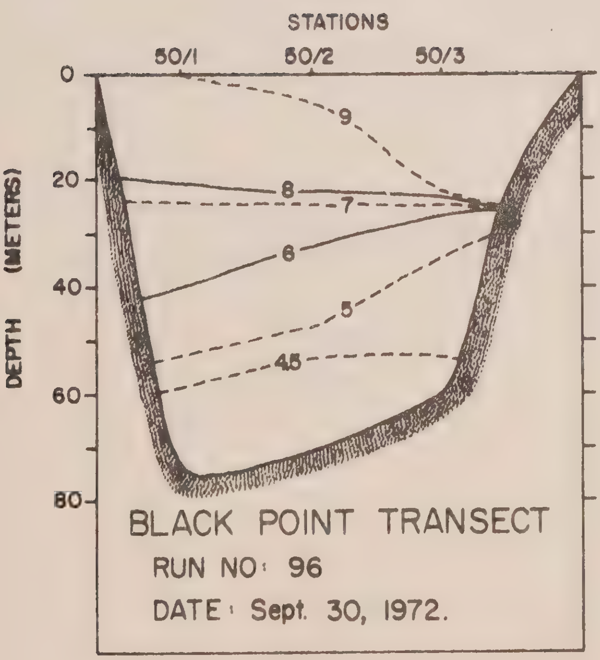

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
11
10
9
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 86
DATE: Sept. 21, 1972.

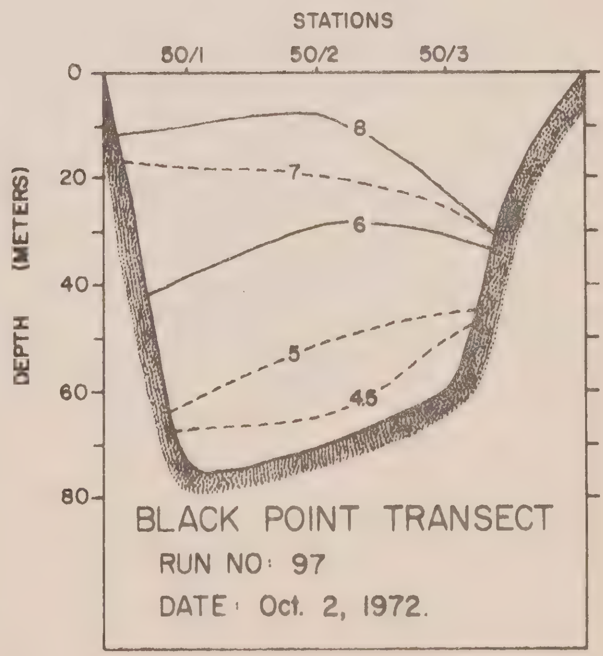

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
10
9
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 87
DATE: Sept. 22, 1972.

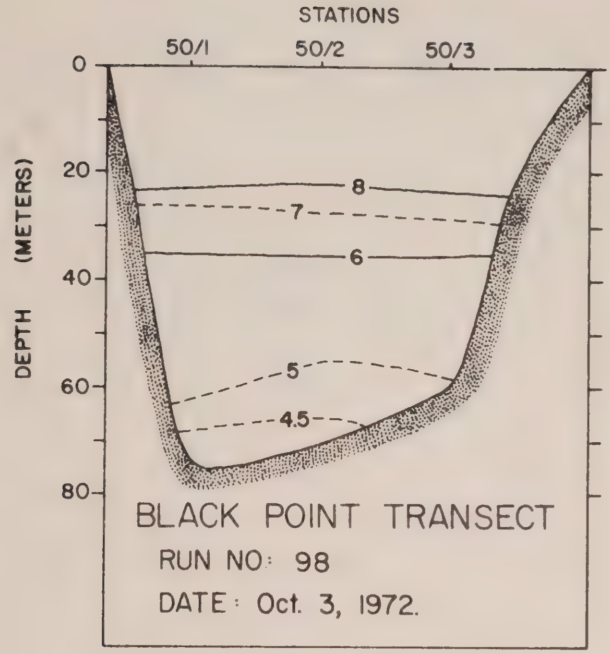

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
9
8
7
6
5
BLACK POINT TRANSECT
RUN NO: 89
DATE: Sept. 25, 1972.

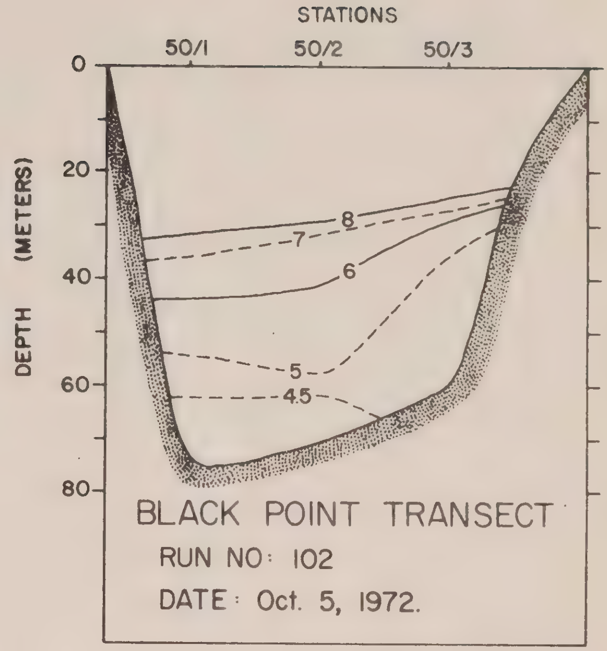

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
9
8
7
6
5
BLACK POINT TRANSECT
RUN NO: 91
DATE: Sept. 26, 1972.

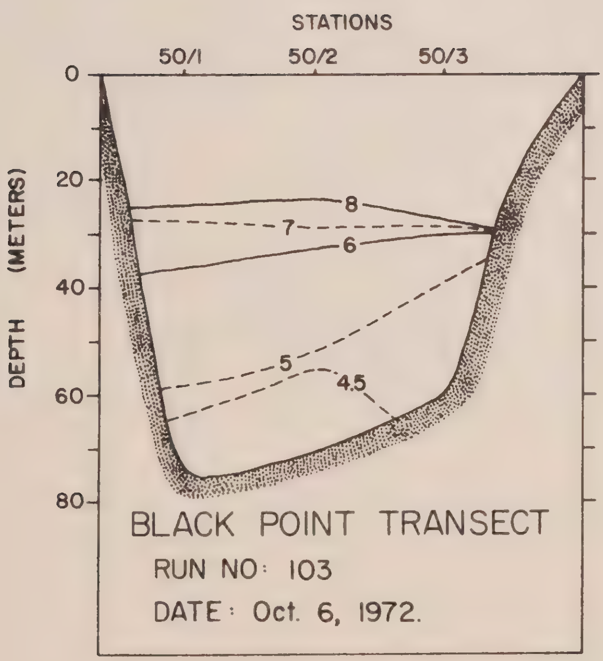

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 95
DATE: Sept. 28, 1972.

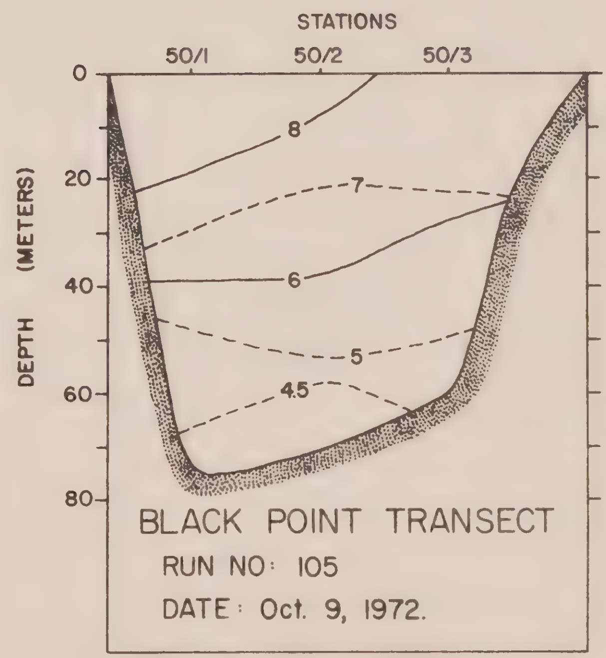

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
9
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 96
DATE: Sept. 30, 1972.

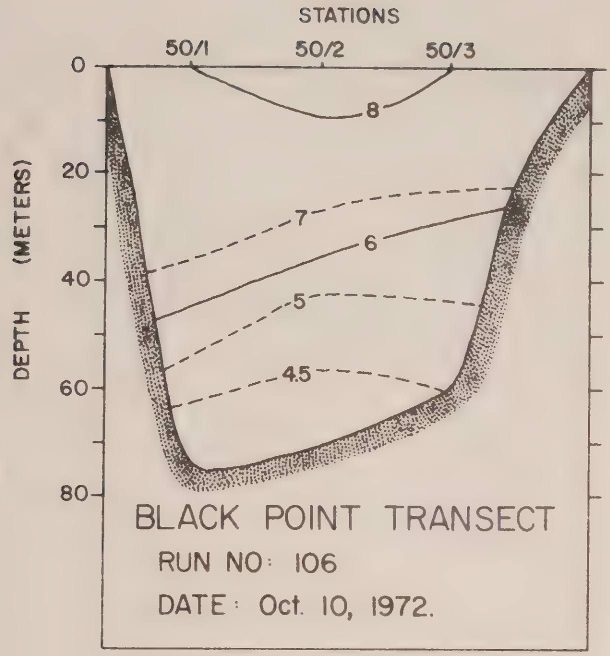

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 97
DATE: Oct. 2, 1972.

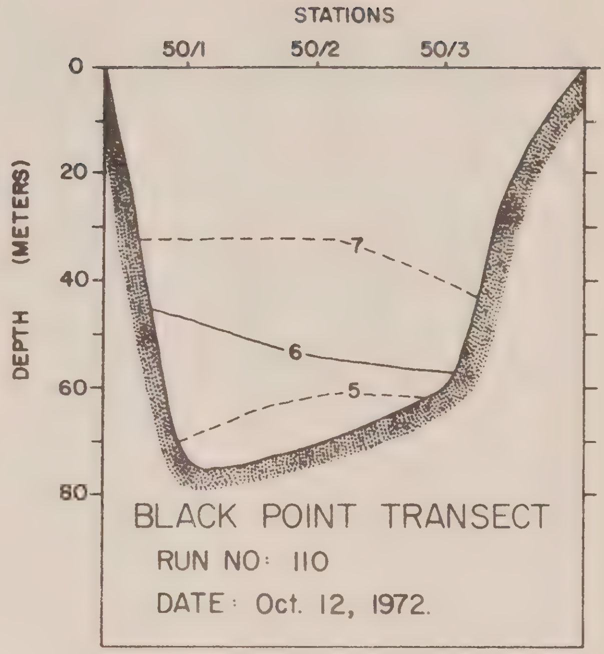

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 98
DATE: Oct. 3, 1972.

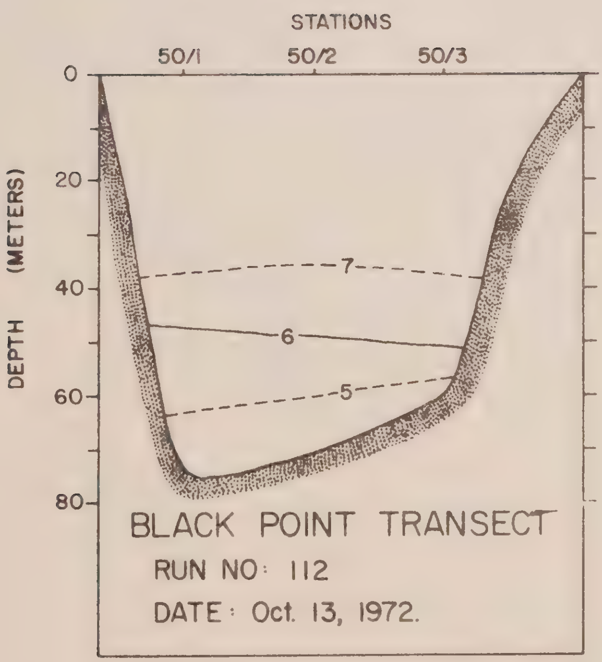

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 102
DATE: Oct. 5, 1972.

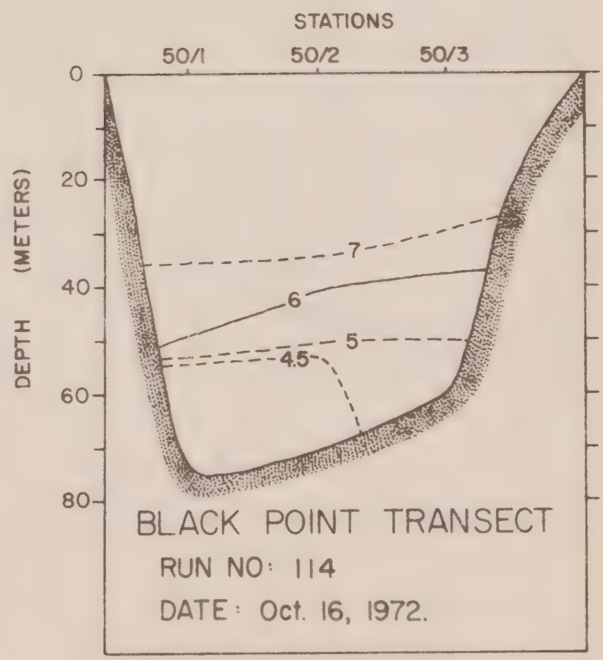

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 103
DATE: Oct. 6, 1972.

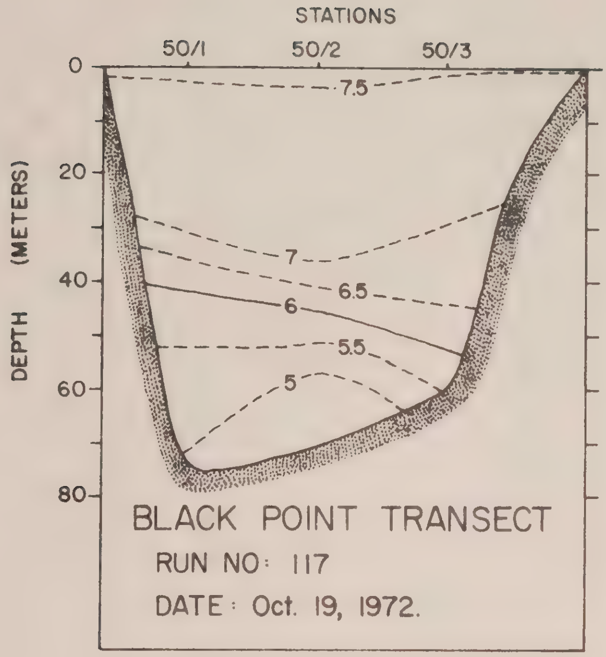

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 105
DATE: Oct. 9, 1972.

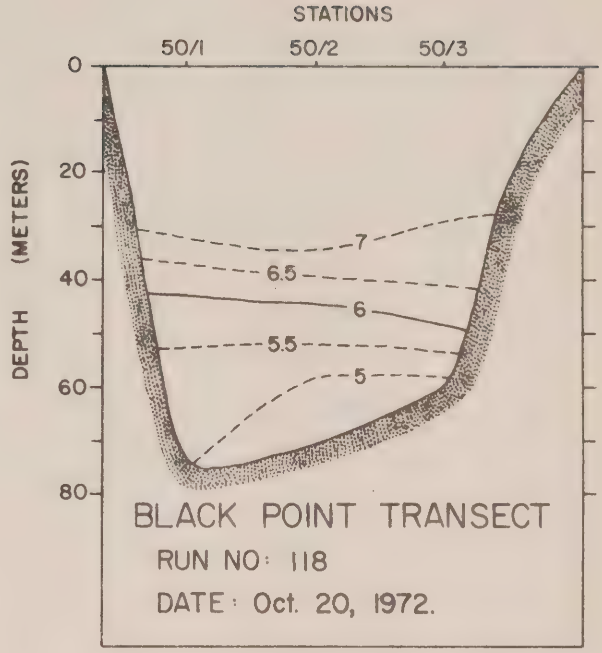

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 106
DATE: Oct. 10, 1972.

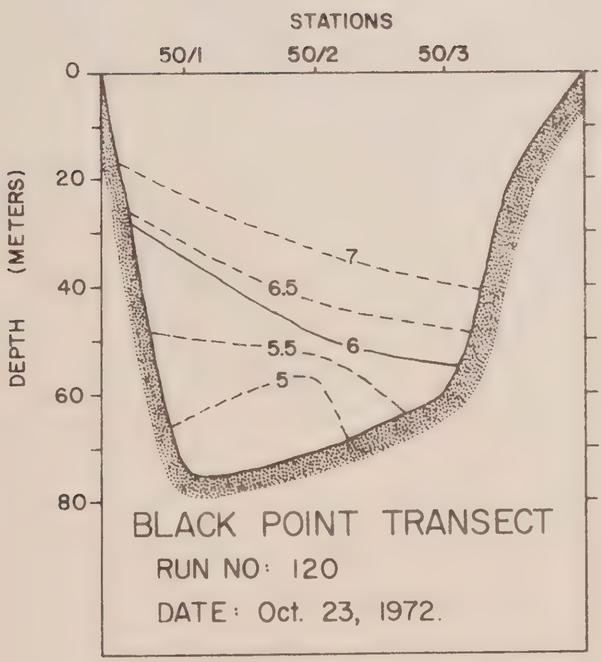

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
7
6
5
BLACK POINT TRANSECT
RUN NO: 110
DATE: Oct. 12, 1972.

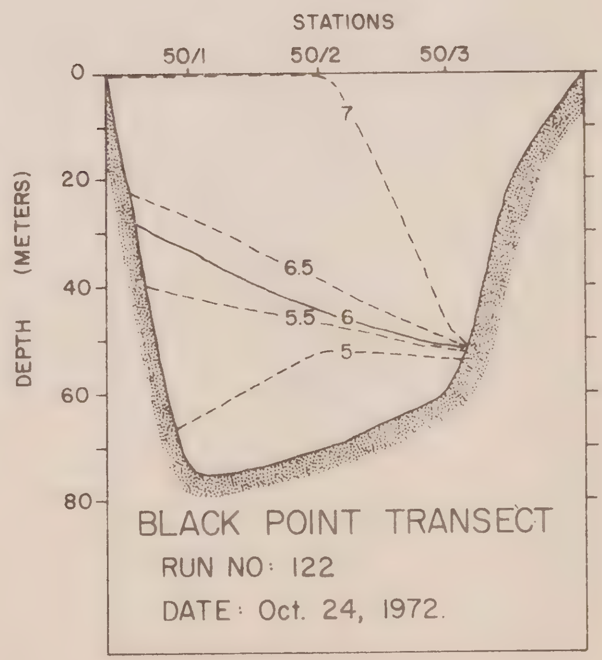

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
7
6
5
BLACK POINT TRANSECT
RUN NO: 112
DATE: Oct. 13, 1972.

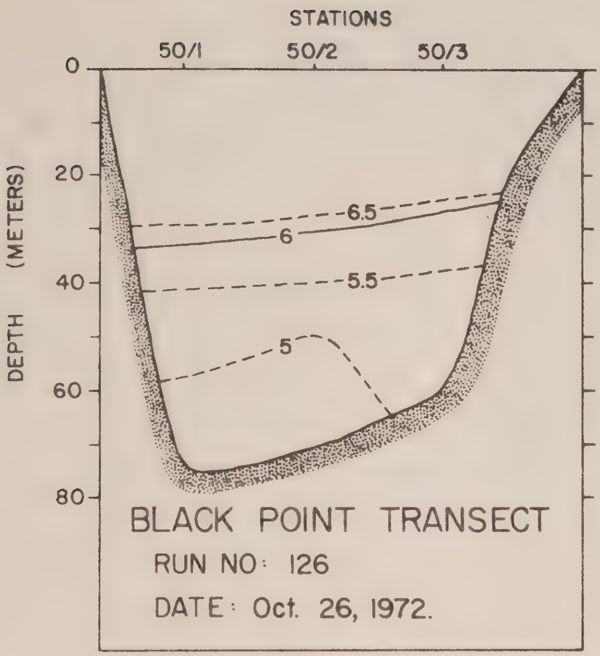

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 114
DATE: Oct. 16, 1972.

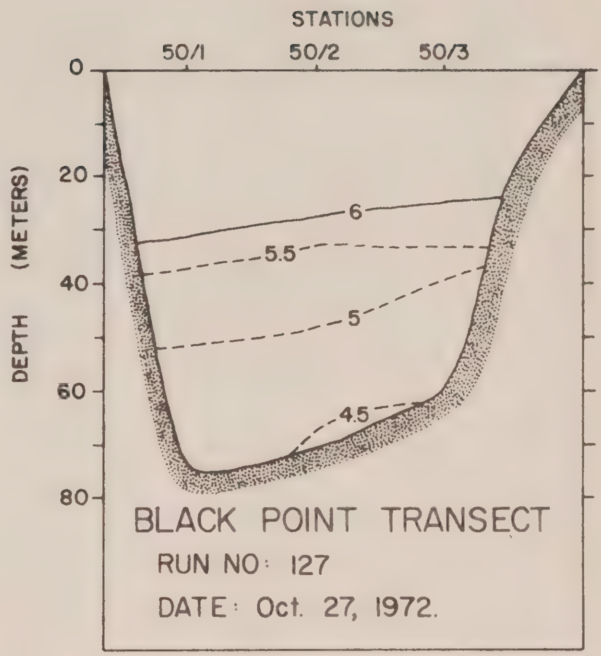

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
7.5
7
6.5
6
5.5
5
BLACK POINT TRANSECT
RUN NO: 117
DATE: Oct. 19, 1972.

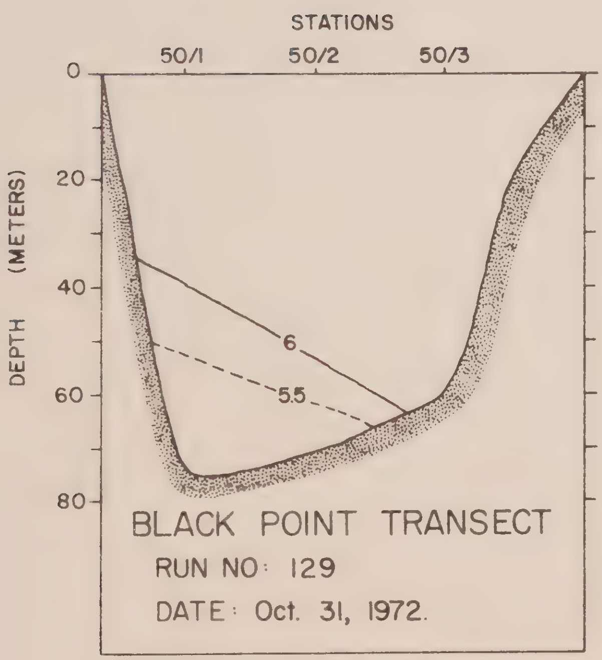

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
7
6.5
6
5.5
5
BLACK POINT TRANSECT
RUN NO: 118
DATE: Oct. 20, 1972.

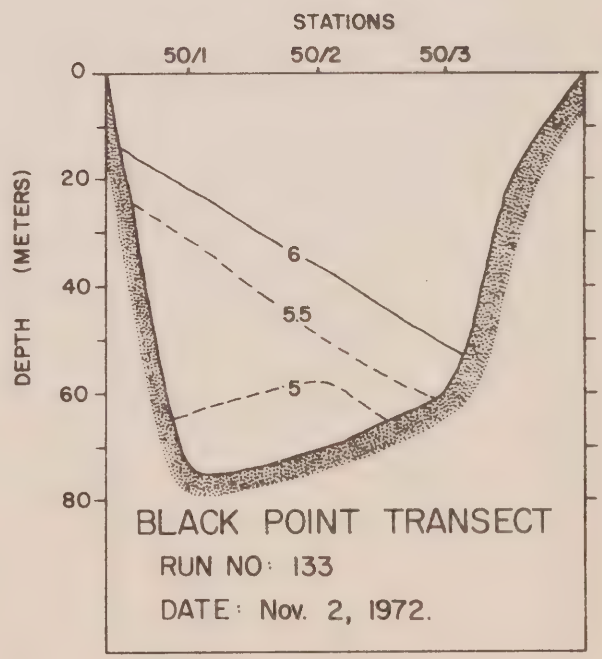

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
7
6.5
6
5.5
5
BLACK POINT TRANSECT
RUN NO: 120
DATE: Oct. 23, 1972.

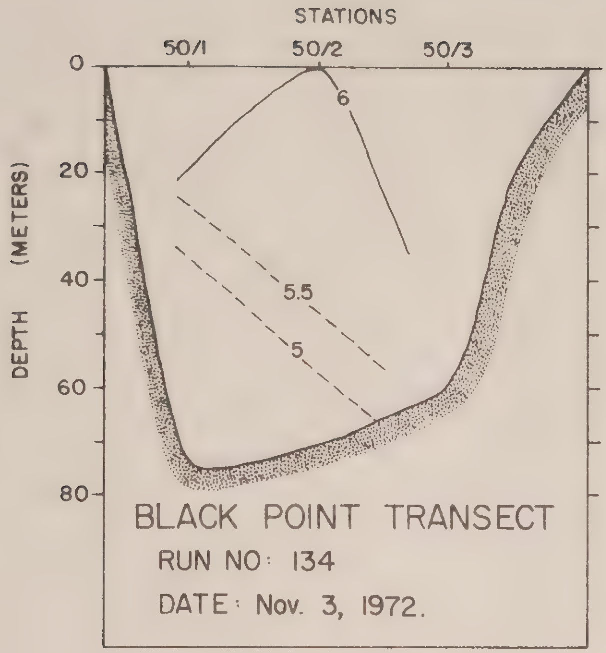

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
7
6.5
5.5
6
5
BLACK POINT TRANSECT
RUN NO: 122
DATE: Oct. 24, 1972.

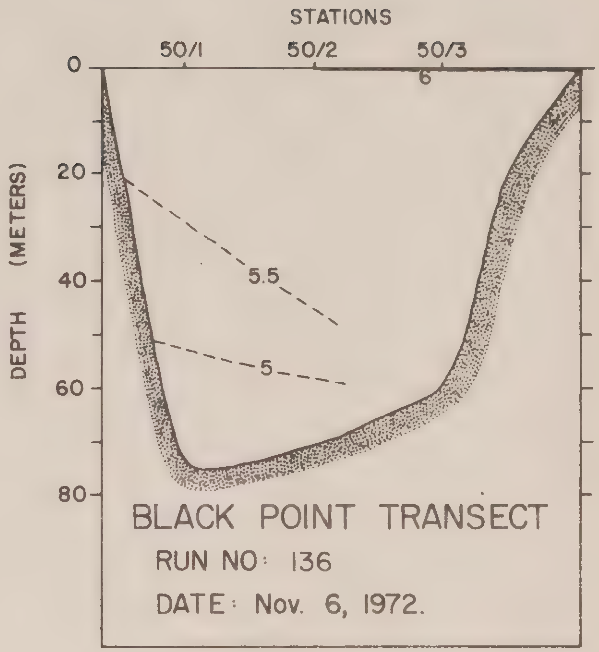

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
6.5
6
5.5
5
BLACK POINT TRANSECT
RUN NO: 126
DATE: Oct. 26, 1972.

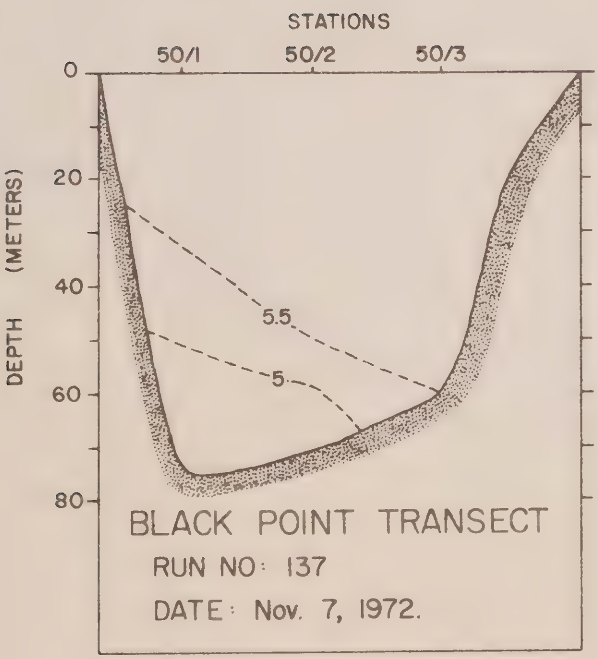

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
6
5.5
5
4.5
BLACK POINT TRANSECT
RUN NO: 127
DATE: Oct. 27, 1972.

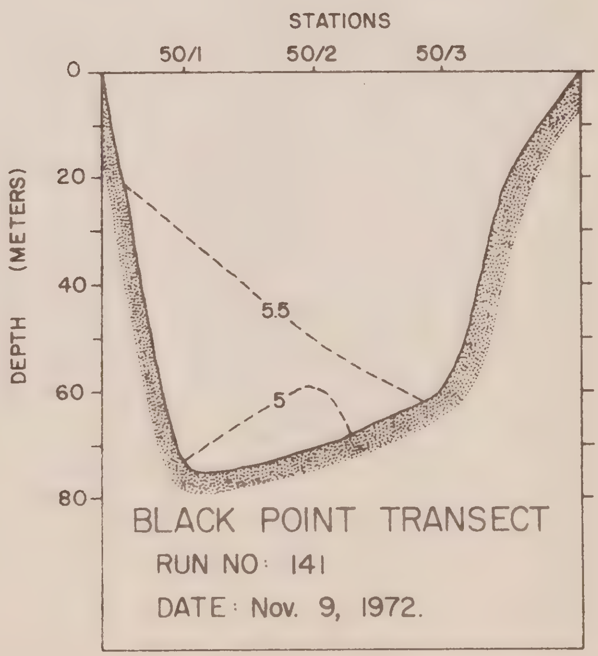

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
6
5.5
BLACK POINT TRANSECT
RUN NO: 129
DATE: Oct. 31, 1972.

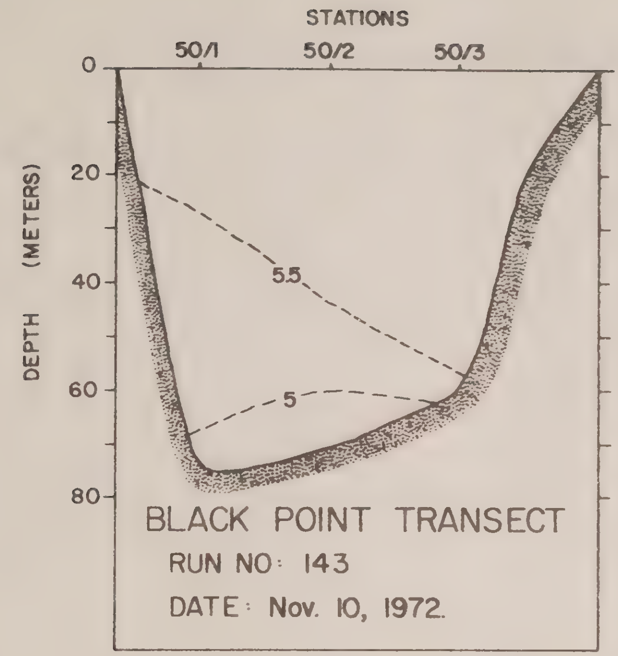

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
6
5.5
5
BLACK POINT TRANSECT
RUN NO: 133
DATE: Nov. 2, 1972.

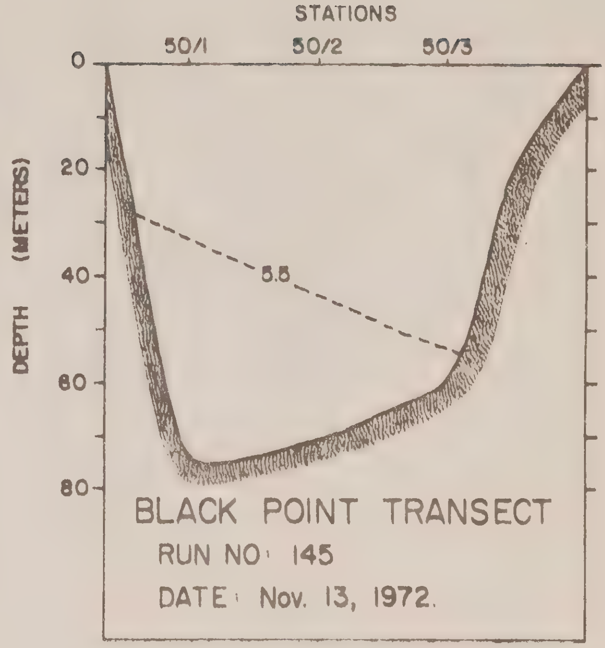

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
6
5.5
5
BLACK POINT TRANSECT
RUN NO: 134
DATE: Nov. 3, 1972.

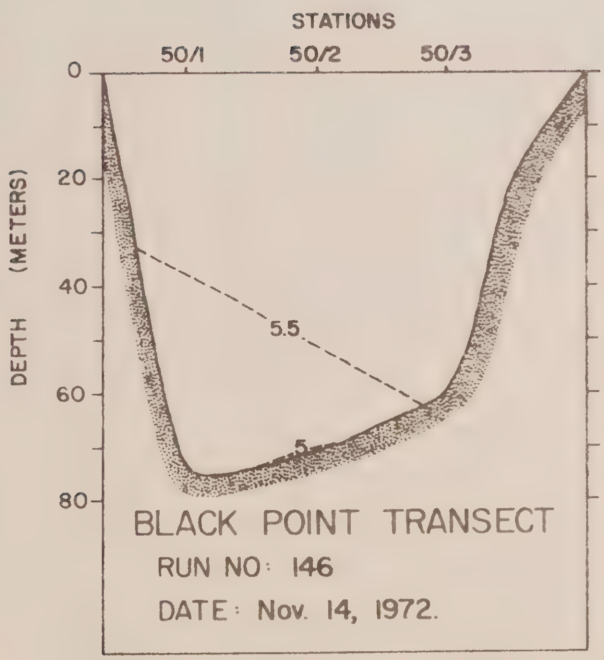

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
6
5.5
5
BLACK POINT TRANSECT
RUN NO: 136
DATE: Nov. 6, 1972.

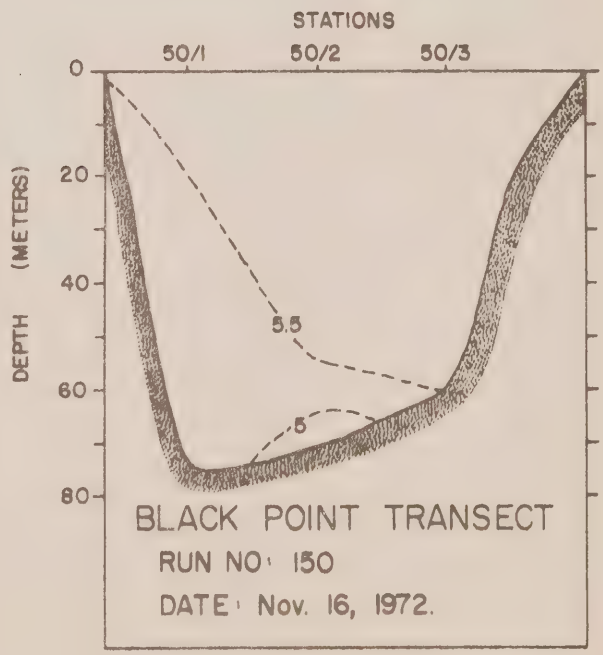

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
5.5
5
BLACK POINT TRANSECT
RUN NO: 137
DATE: Nov. 7, 1972.

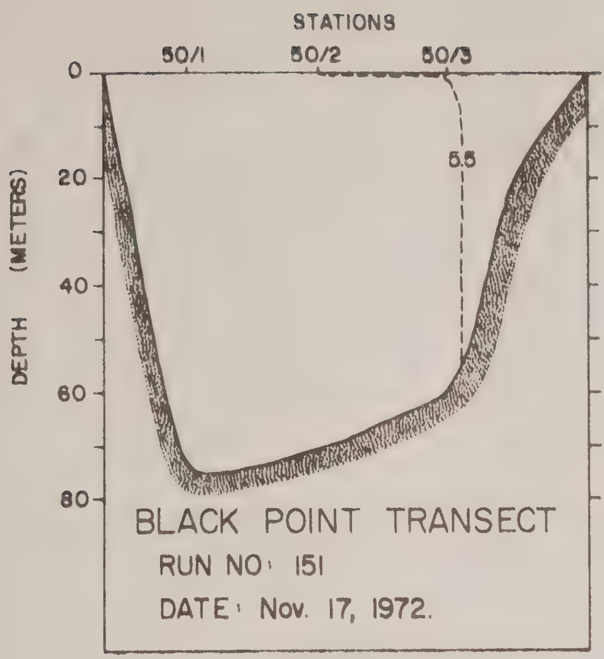

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
5.5
5
BLACK POINT TRANSECT
RUN NO: 141
DATE: Nov. 9, 1972.


STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
5.5
5
BLACK POINT TRANSECT
RUN NO: 143
DATE: Nov. 10, 1972.

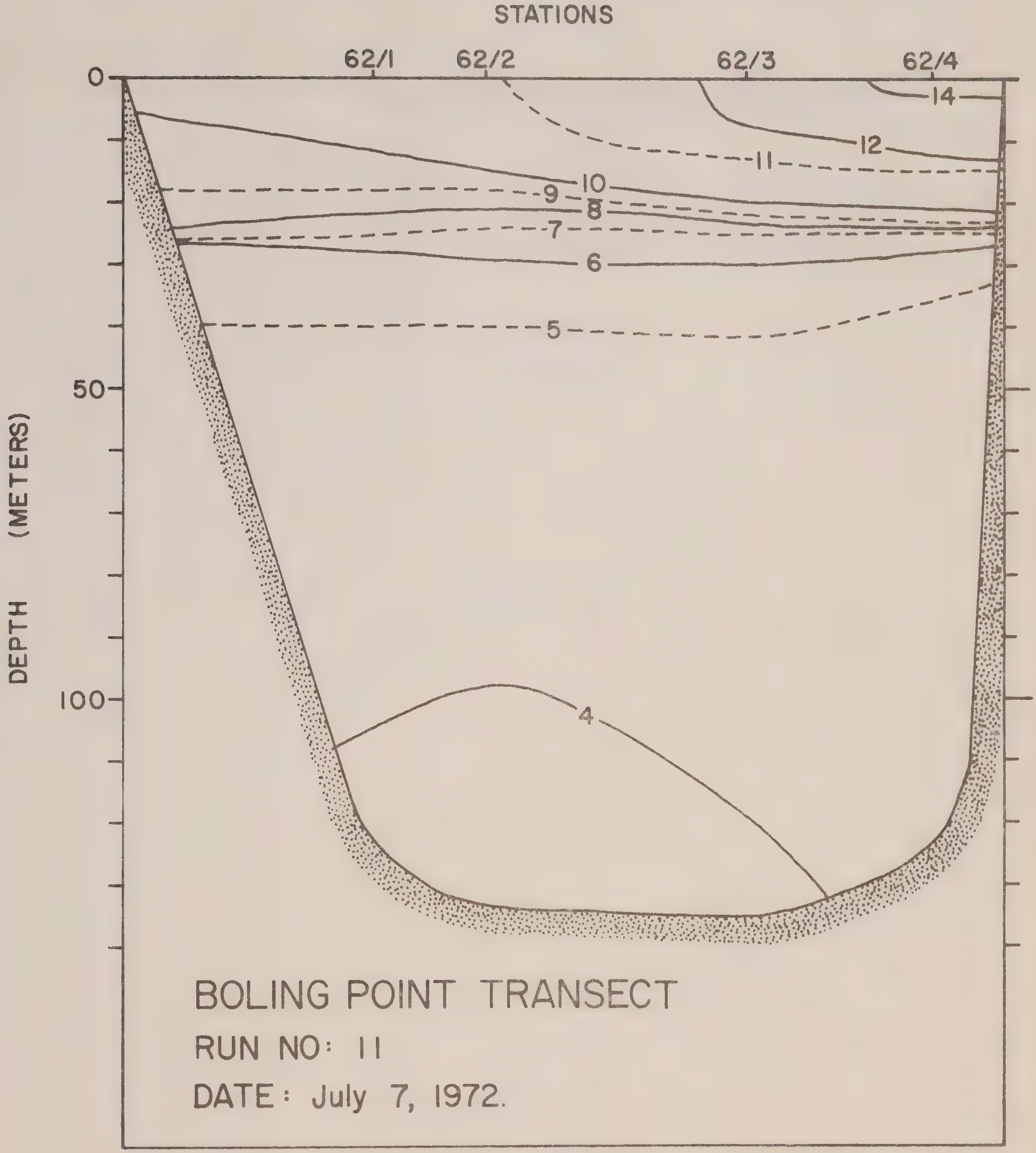

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
5.5
BLACK POINT TRANSECT
RUN NO: 145
DATE: Nov. 13, 1972.

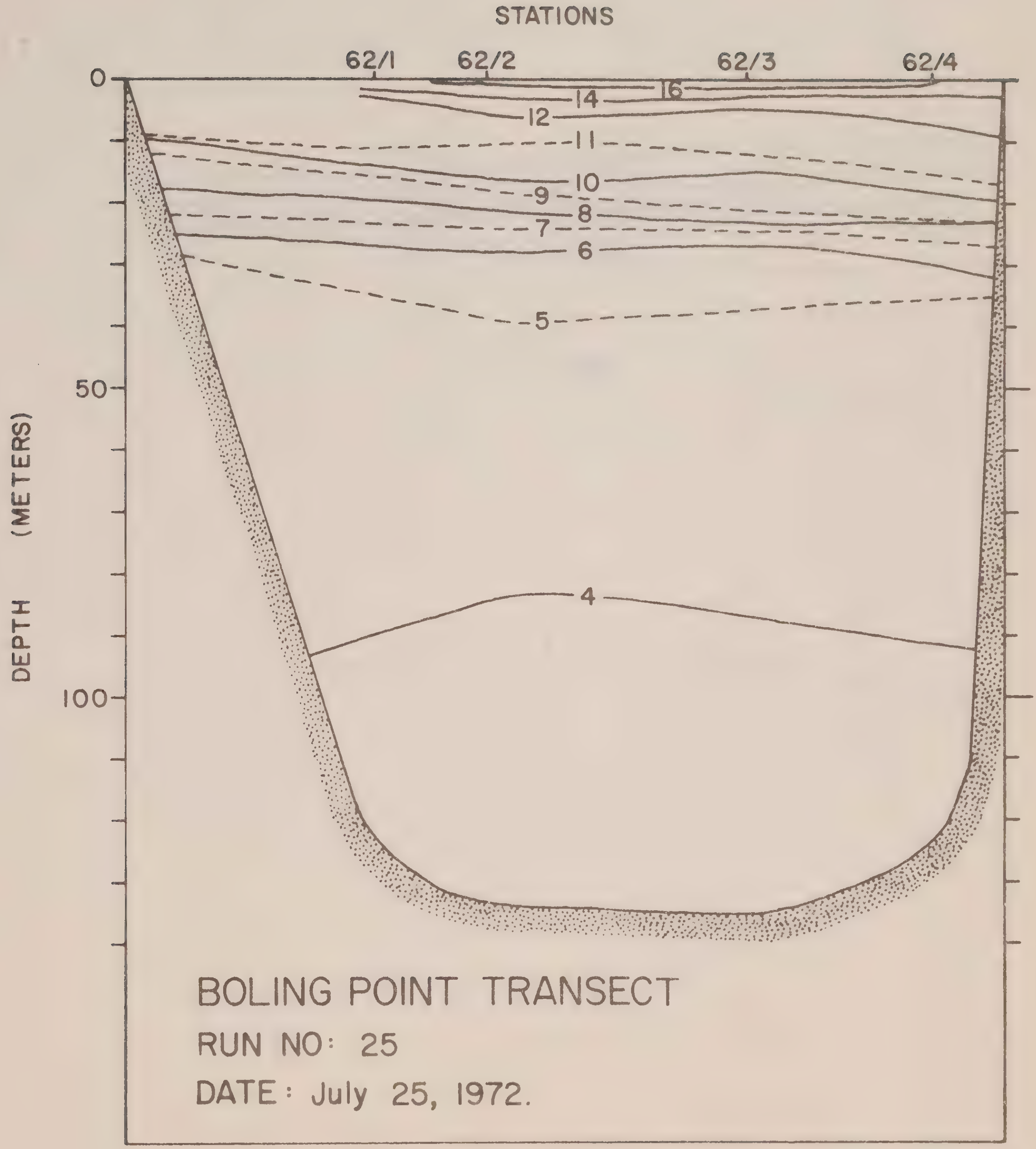

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
5.5
5
BLACK POINT TRANSECT
RUN NO: 146
DATE: Nov. 14, 1972.

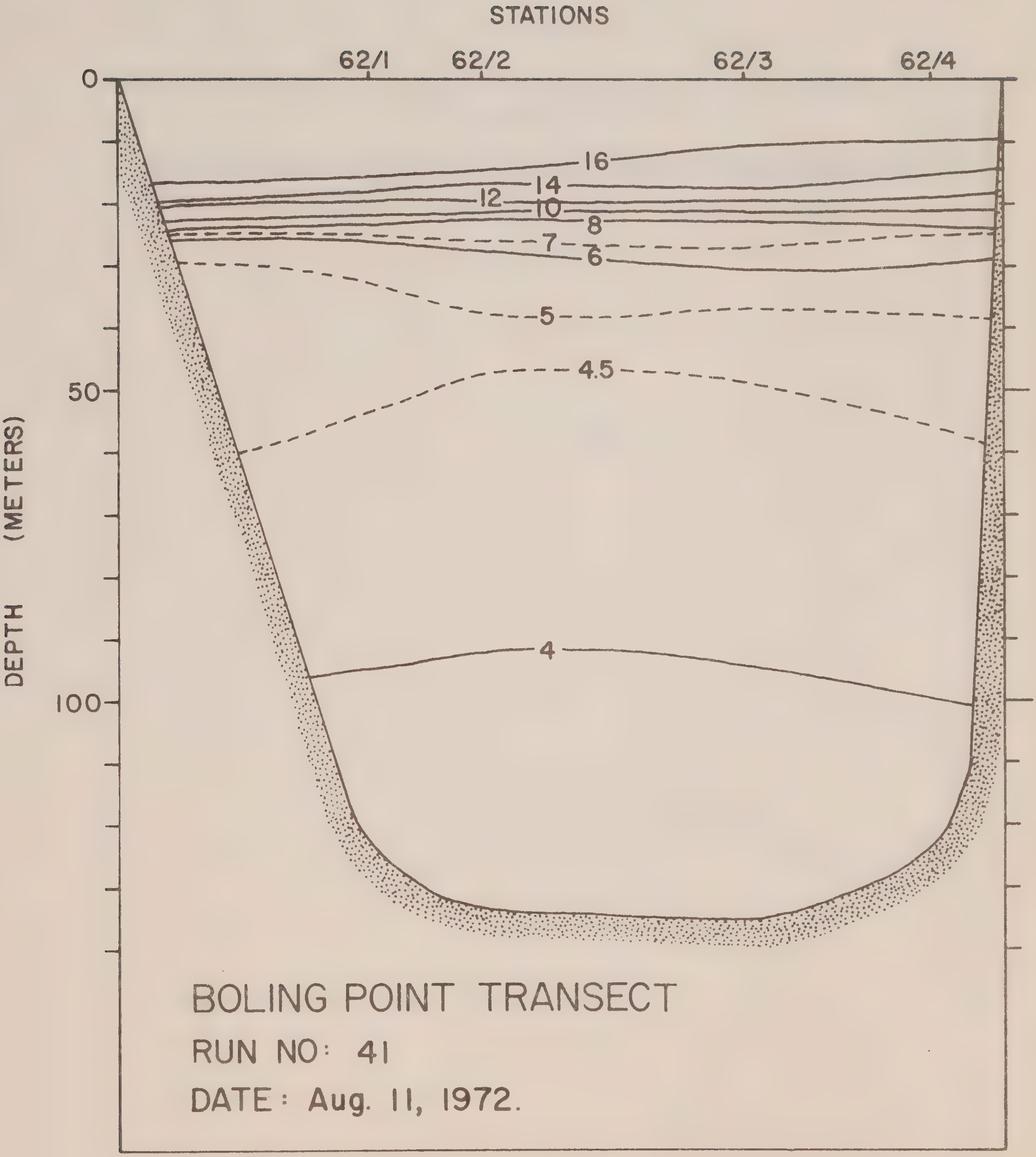

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
5.5
5
BLACK POINT TRANSECT
RUN NO: 150
DATE: Nov. 16, 1972.

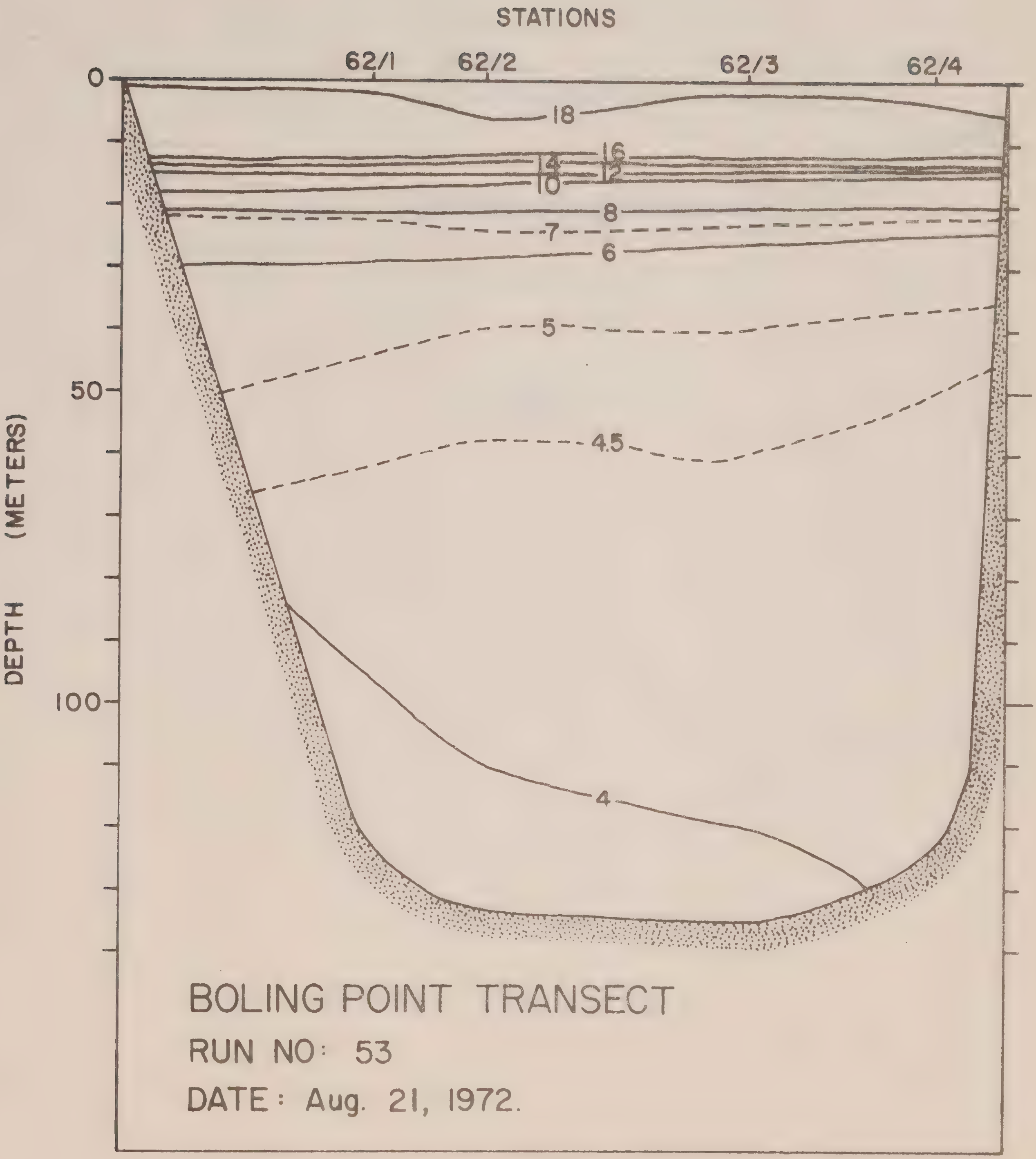

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
5.5
BLACK POINT TRANSECT
RUN NO: 151
DATE: Nov. 17, 1972.

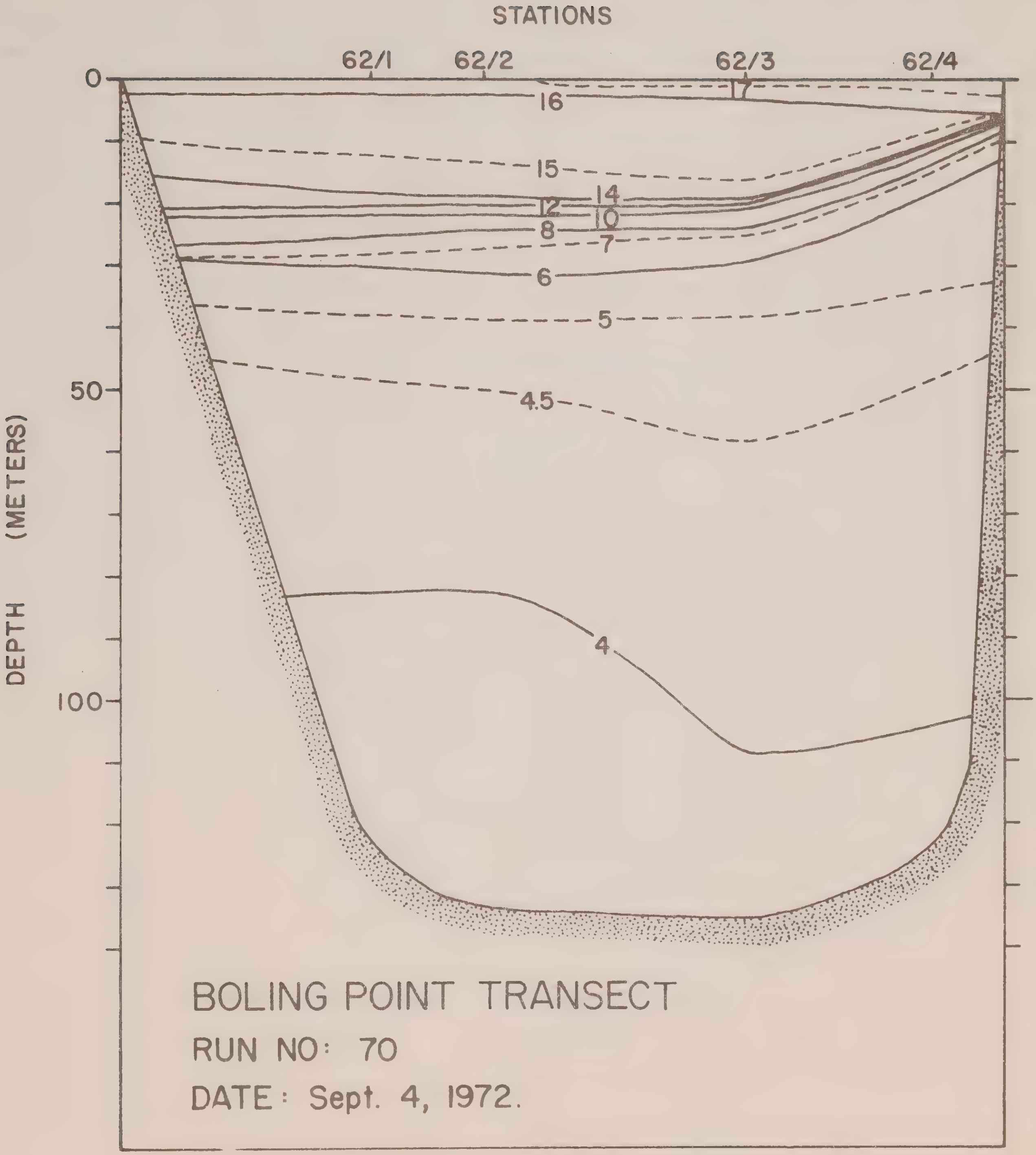
BOLING POINT TRANSECT (JULY 7 - NOVEMBER 10)

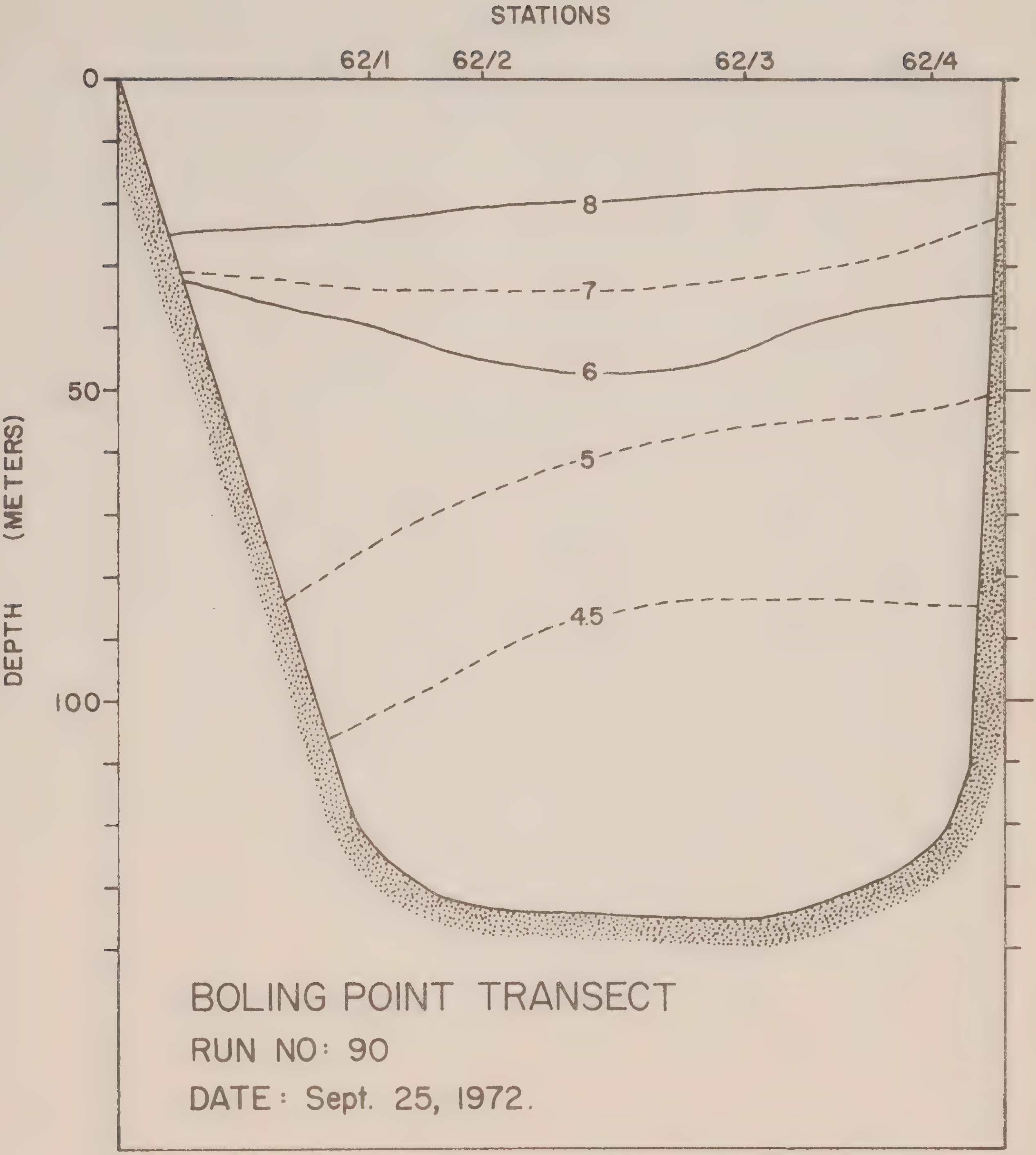

STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
14
12
11
10
9
8
7
6
5
4
BOLING POINT TRANSECT
RUN NO: 11
DATE: July 7, 1972.


STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
16
14
12
11
10
9
8
7
6
5
4
BOLING POINT TRANSECT
RUN NO: 25
DATE: July 25, 1972.

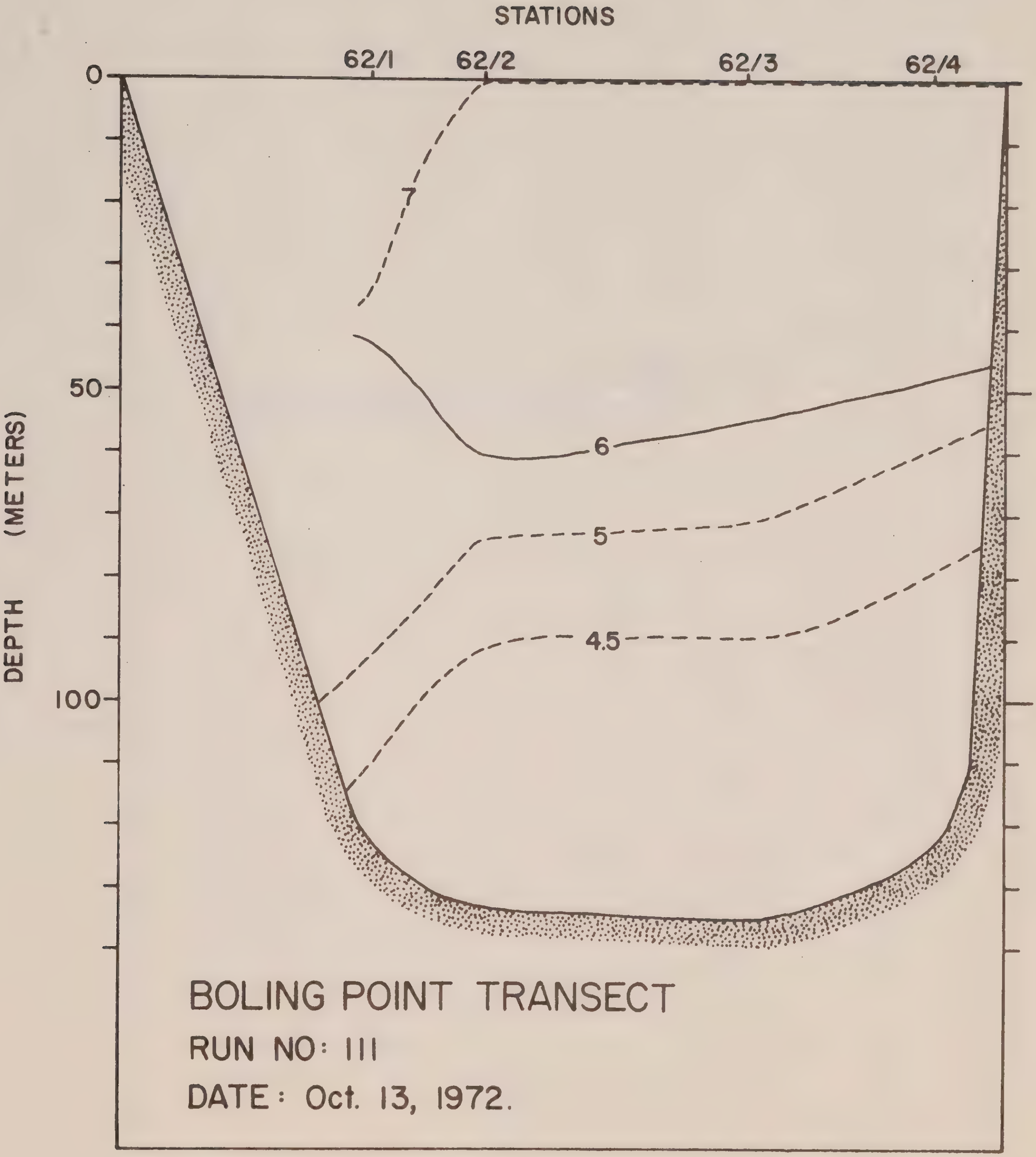

STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
16
14
12
10
8
7
6
5
4.5
4
BOLING POINT TRANSECT
RUN NO: 41
DATE: Aug. 11, 1972.

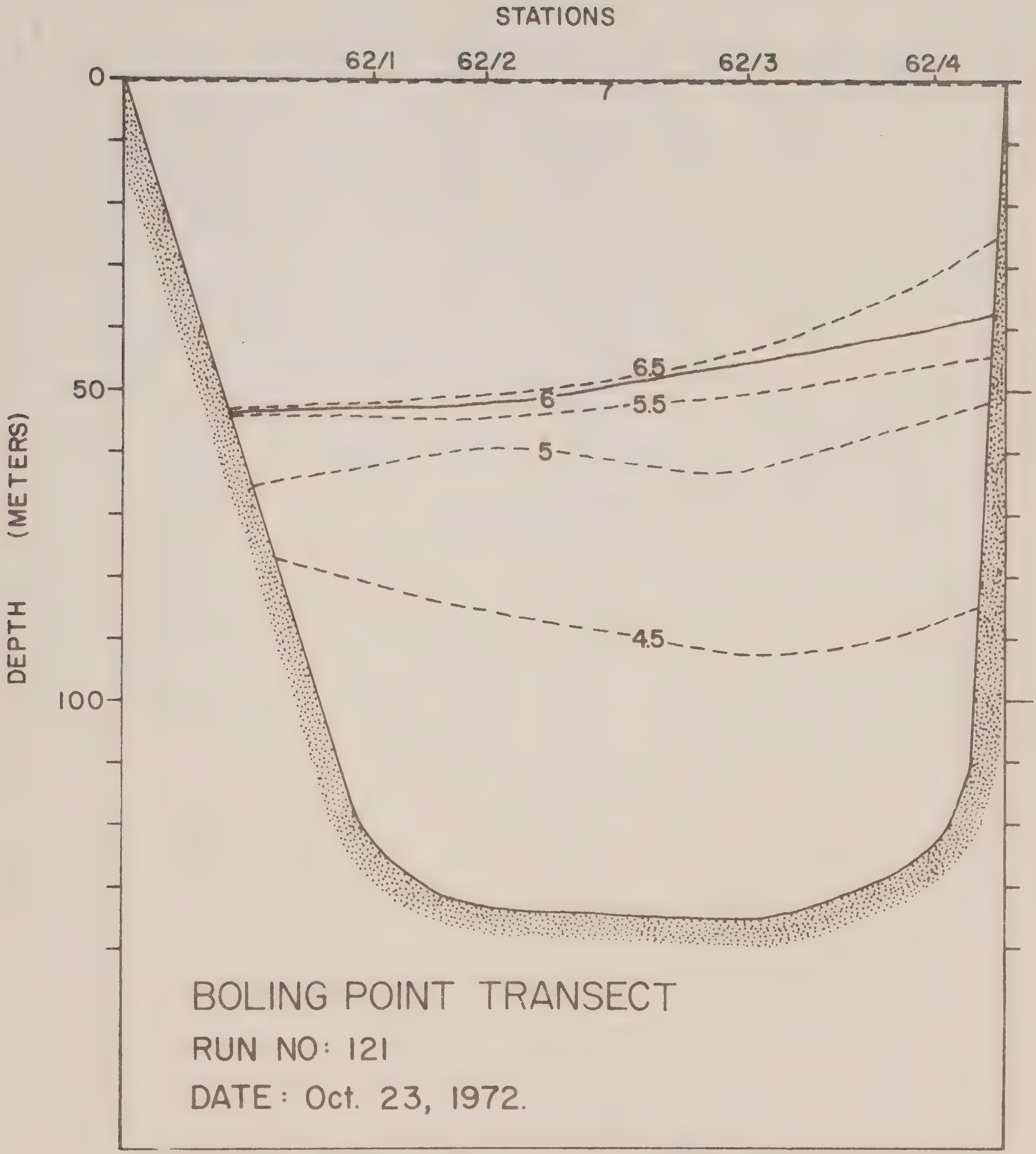

STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
18
16
14
12
10
8
7
6
5
4.5
4
BOLING POINT TRANSECT
RUN NO: 53
DATE: Aug. 21, 1972.

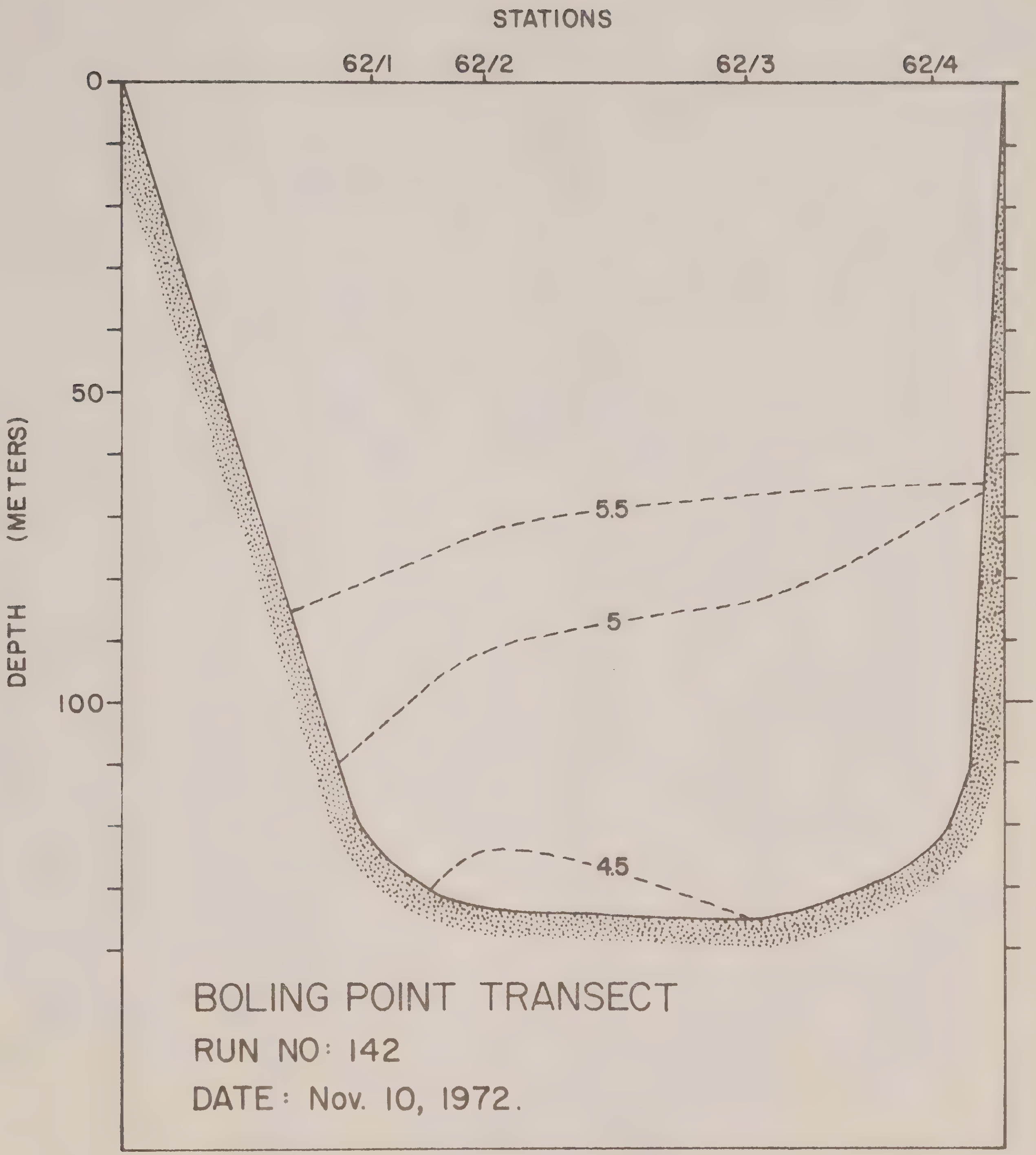

STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
17
16
15
14
12
10
8
7
6
5
4.5
4
BOLING POINT TRANSECT
RUN NO: 70
DATE: Sept. 4, 1972.



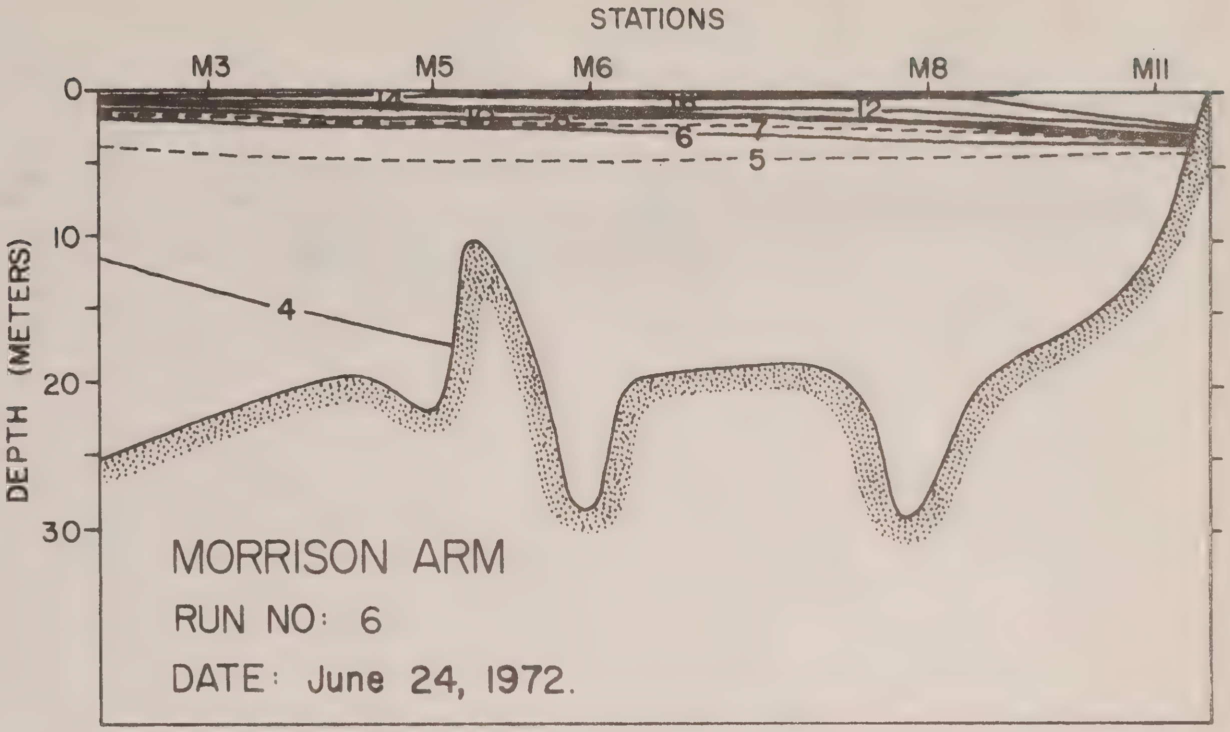
STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
8
7
6
5
4.5
BOLING POINT TRANSECT
RUN NO: 90
DATE: Sept. 25, 1972.

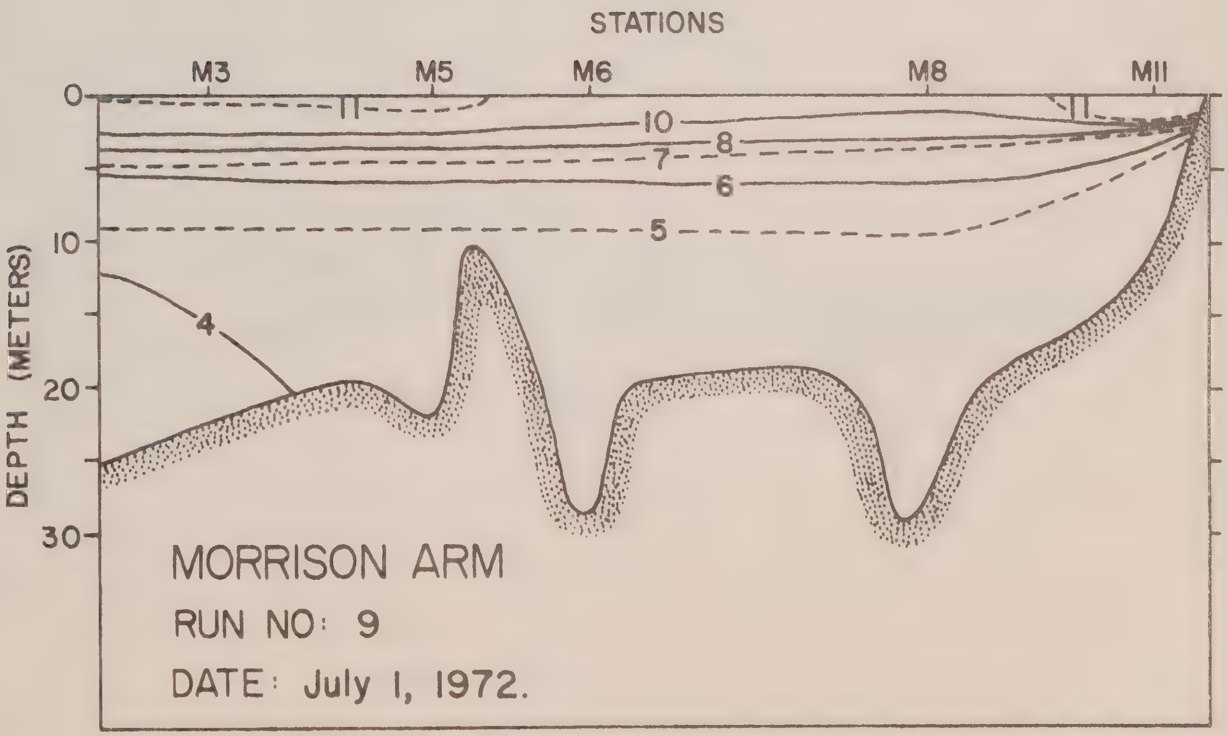

STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
7
6
5
4.5
BOLING POINT TRANSECT
RUN NO: 111
DATE: Oct. 13, 1972.

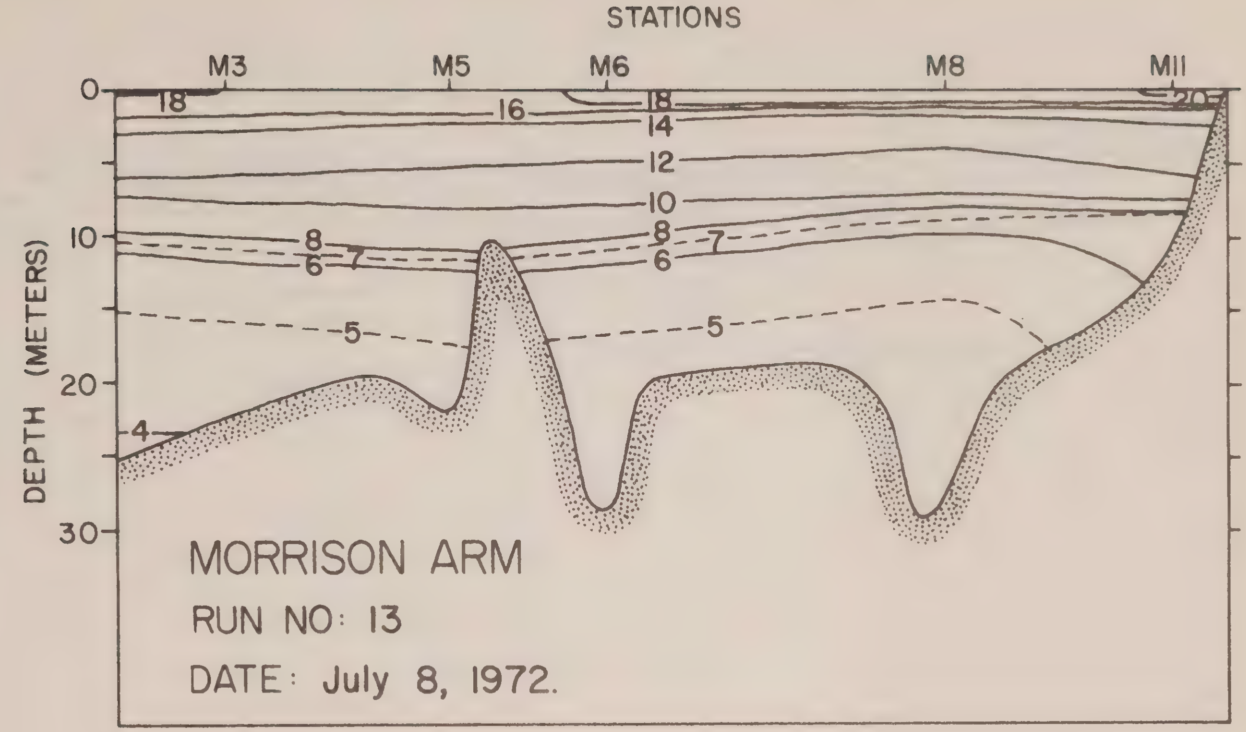

STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
7
6.5
6
5.5
5
4.5
BOLING POINT TRANSECT
RUN NO: 121
DATE: Oct. 23, 1972.

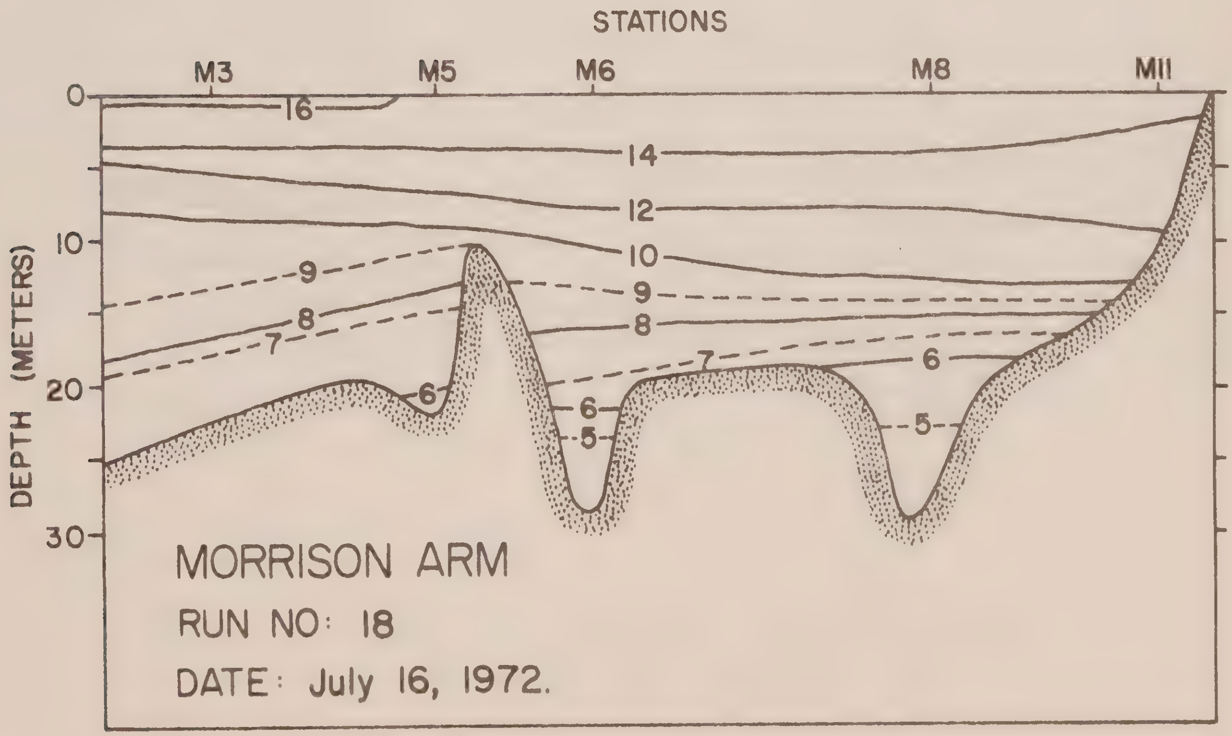

STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
5.5
5
4.5
BOLING POINT TRANSECT
RUN NO: 142
DATE: Nov. 10, 1972.

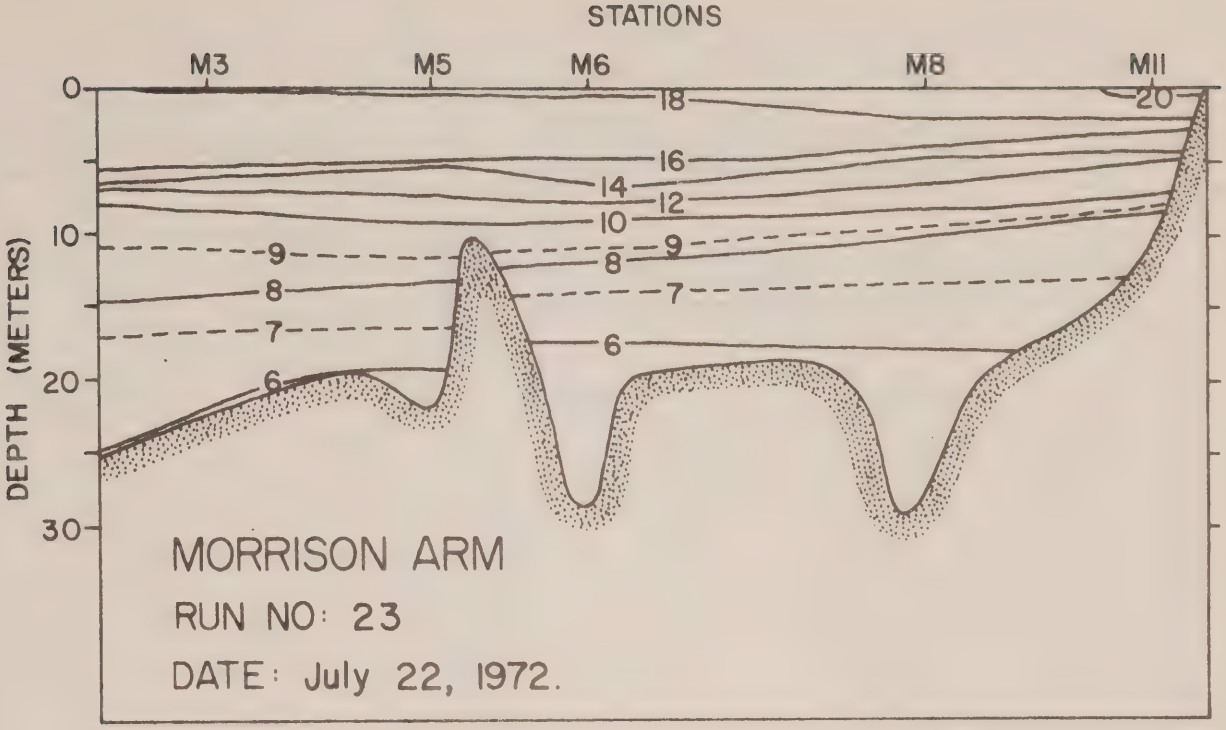
MORRISON ARM (JUNE 22 - NOVEMBER 25)

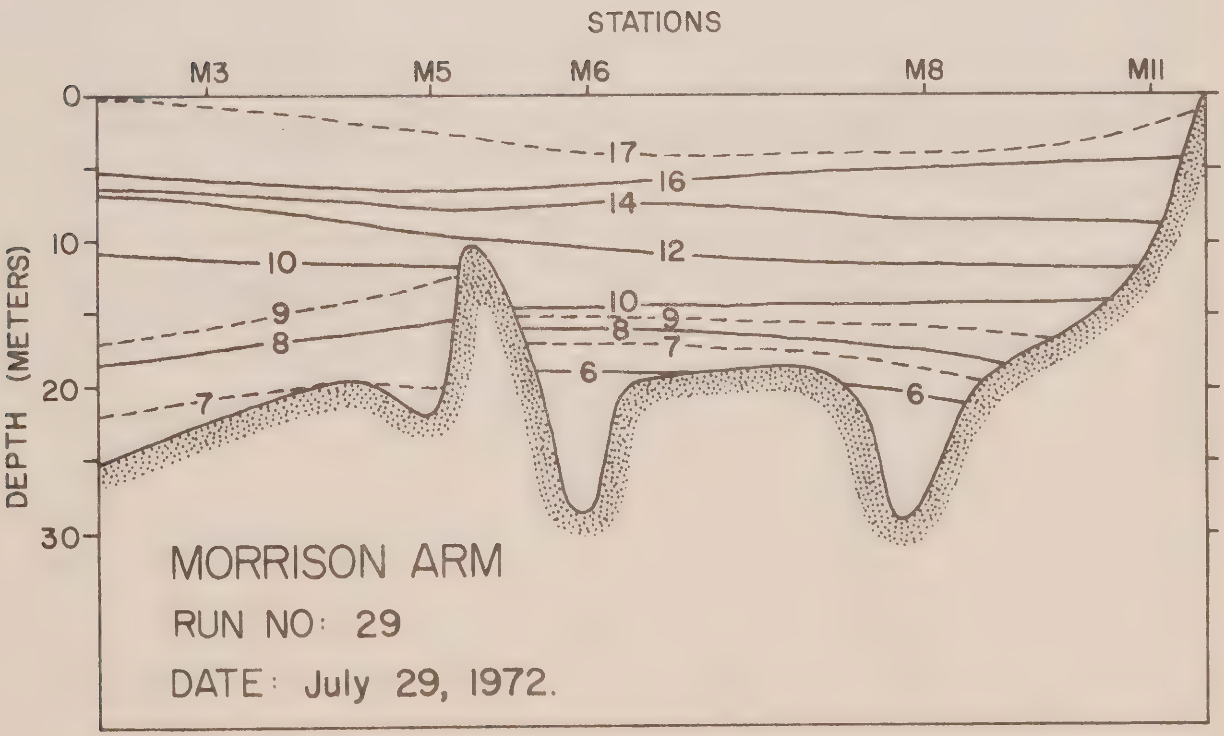

STATIONS
M3
M5
M6
M8
M11
0
10
20
30
DEPTH (METERS)
12
10
8
7
6
5
4
MORRISON ARM
RUN NO: 6
DATE: June 24, 1972.

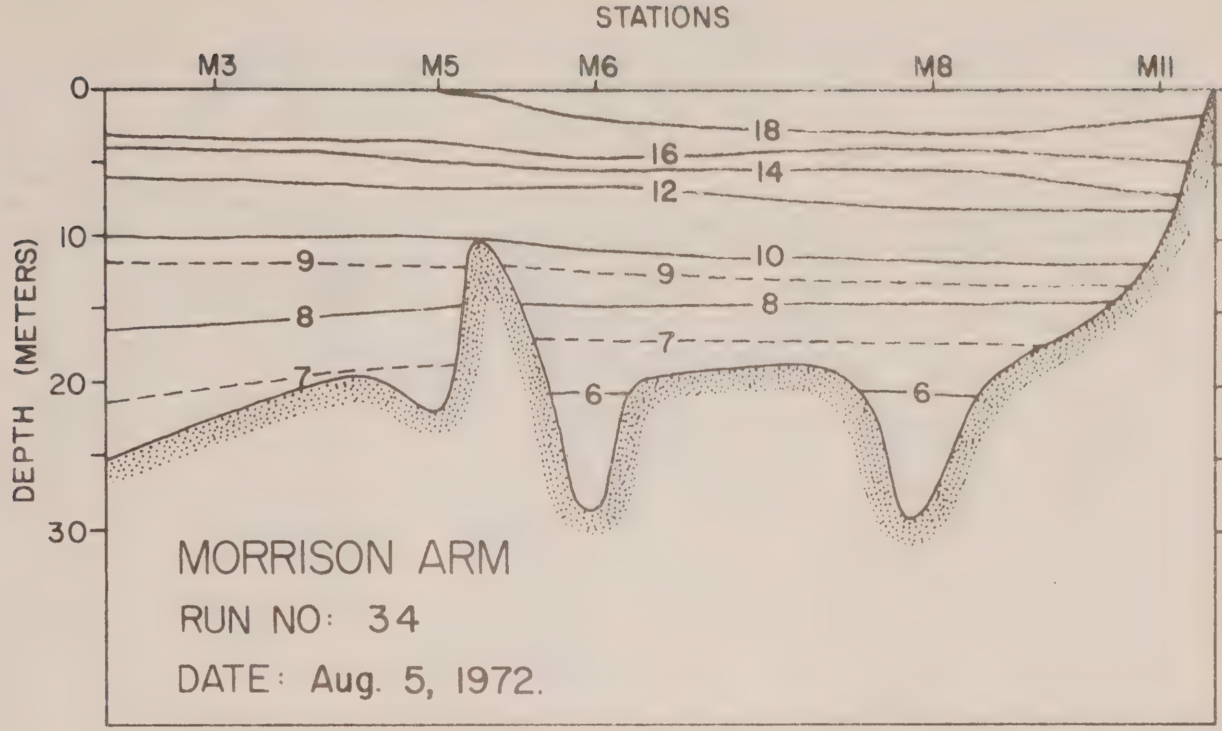

STATIONS
M3
M5
M6
M8
M11
0
10
20
30
DEPTH (METERS)
11
10
8
7
6
5
4
MORRISON ARM
RUN NO: 9
DATE: July 1, 1972.

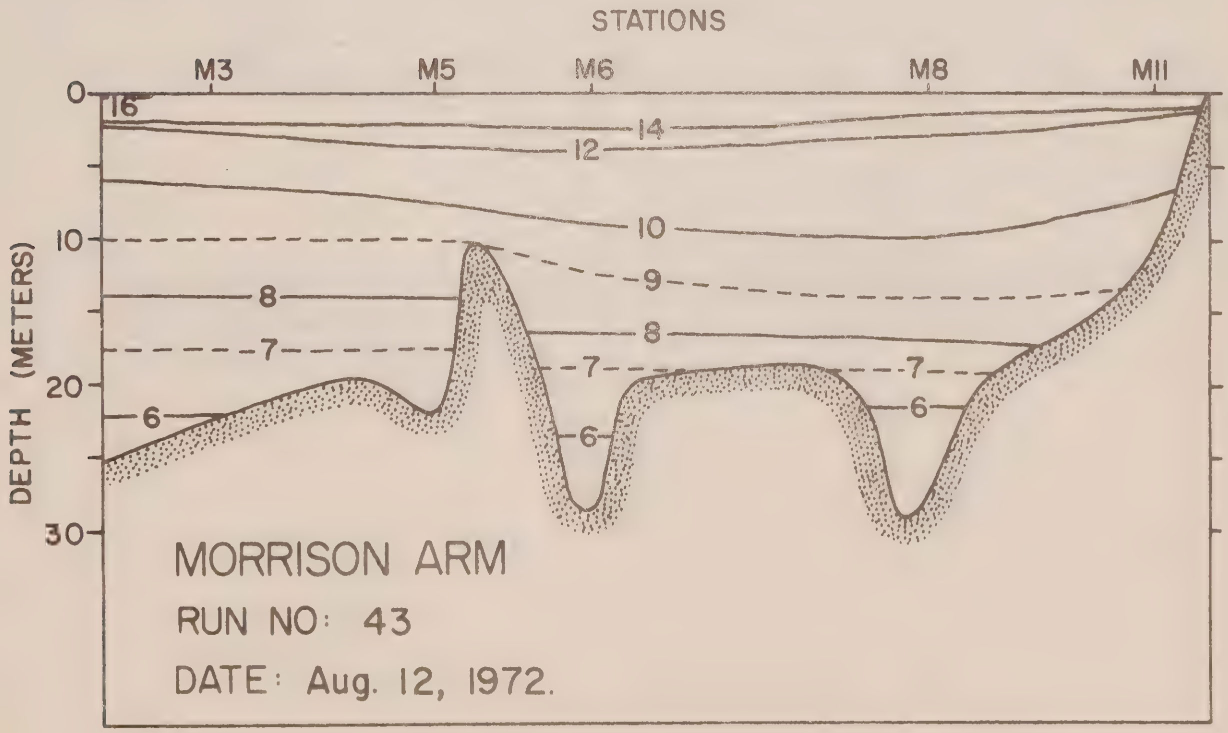

STATIONS
M3
M5
M6
M8
M11
DEPTH (METERS)
0
10
20
30
18
16
18
20
14
12
10
8
7
6
5
4
MORRISON ARM
RUN NO: 13
DATE: July 8, 1972.

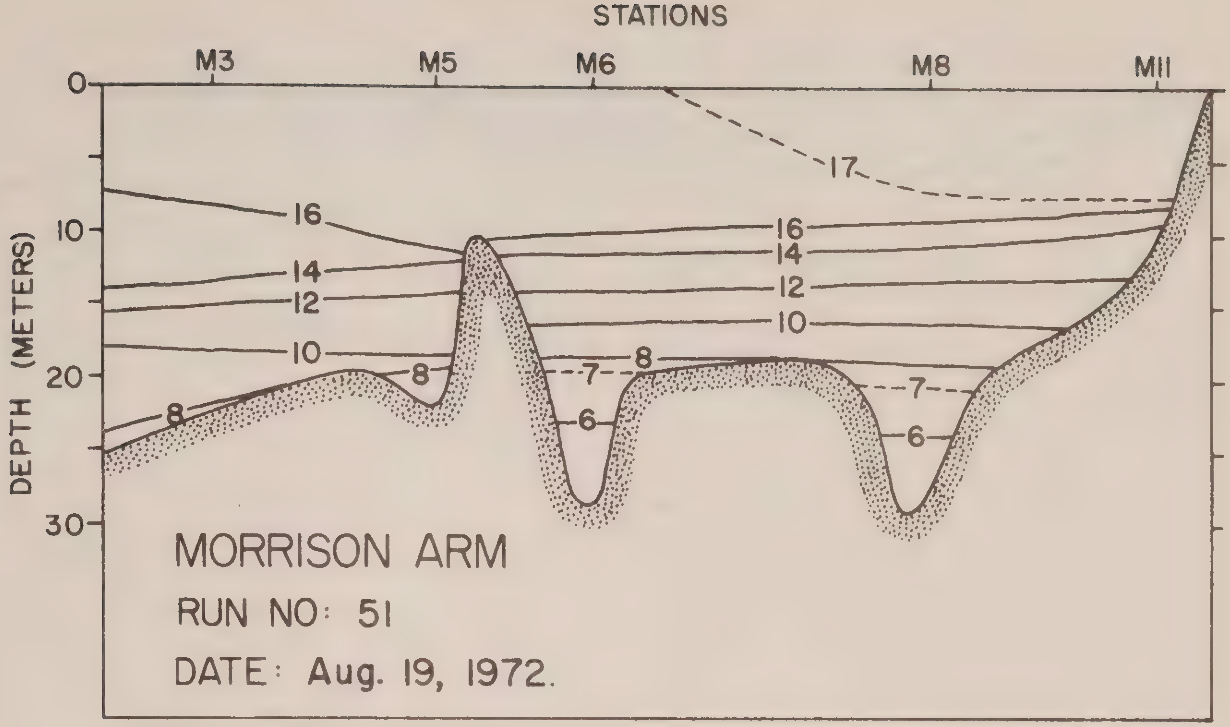

STATIONS
M3
M5
M6
M8
M11
DEPTH (METERS)
0
10
20
30
16
14
12
10
9
8
7
6
5
MORRISON ARM
RUN NO: 18
DATE: July 16, 1972.

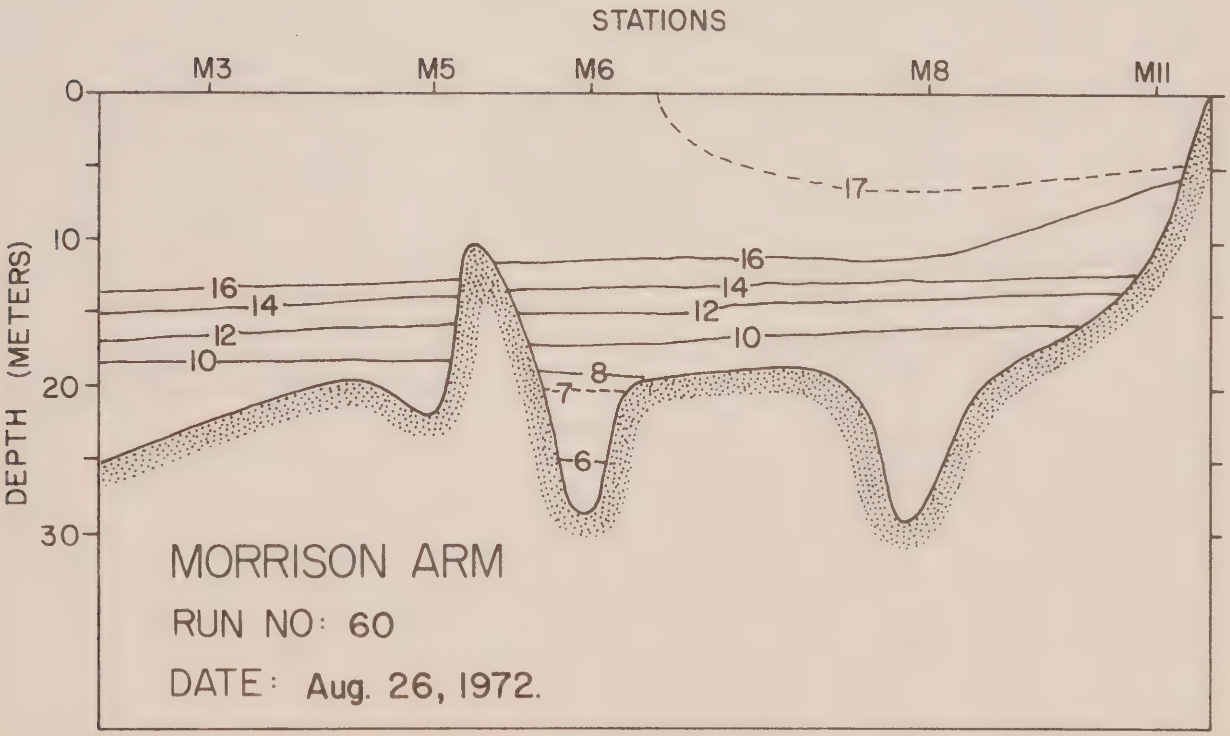

STATIONS
M3
M5
M6
M8
M11
DEPTH (METERS)
0
10
20
30
18
20
16
14
12
10
9
8
7
6
MORRISON ARM
RUN NO: 23
DATE: July 22, 1972.

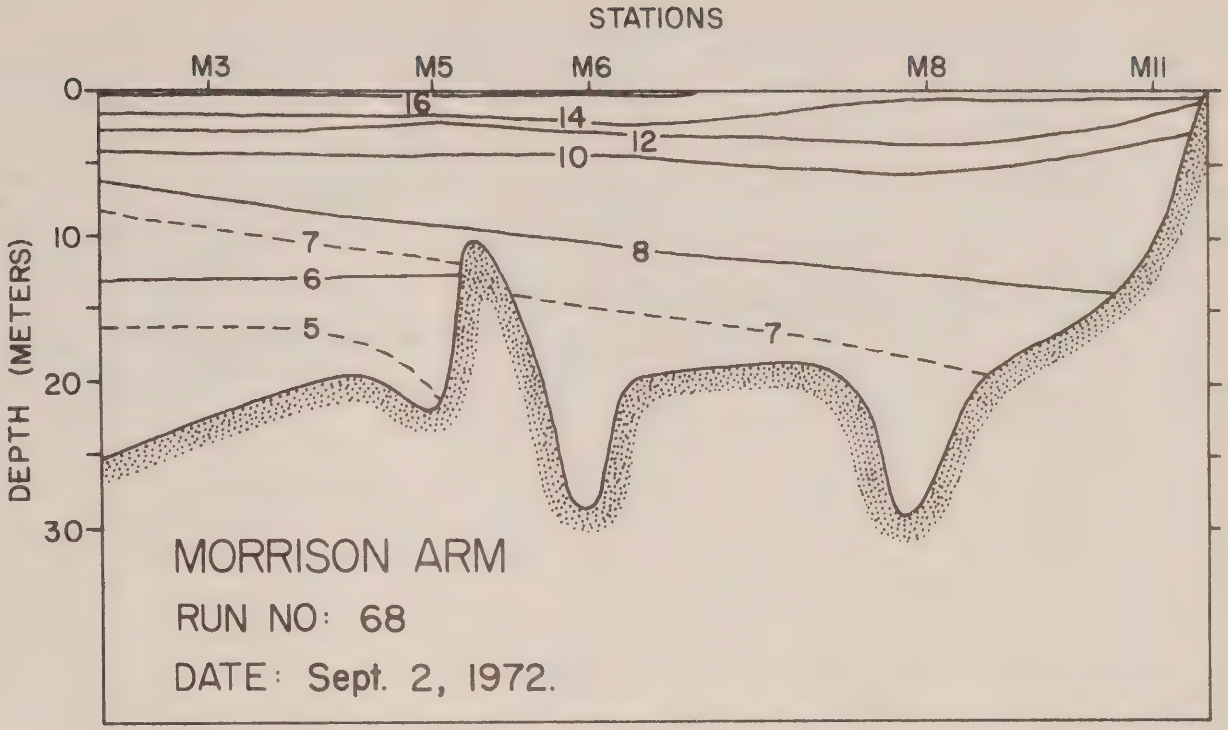

STATIONS
M3
M5
M6
M8
M11
DEPTH (METERS)
0
10
20
30
17
16
14
12
10
9
8
7
6
MORRISON ARM
RUN NO: 29
DATE: July 29, 1972.

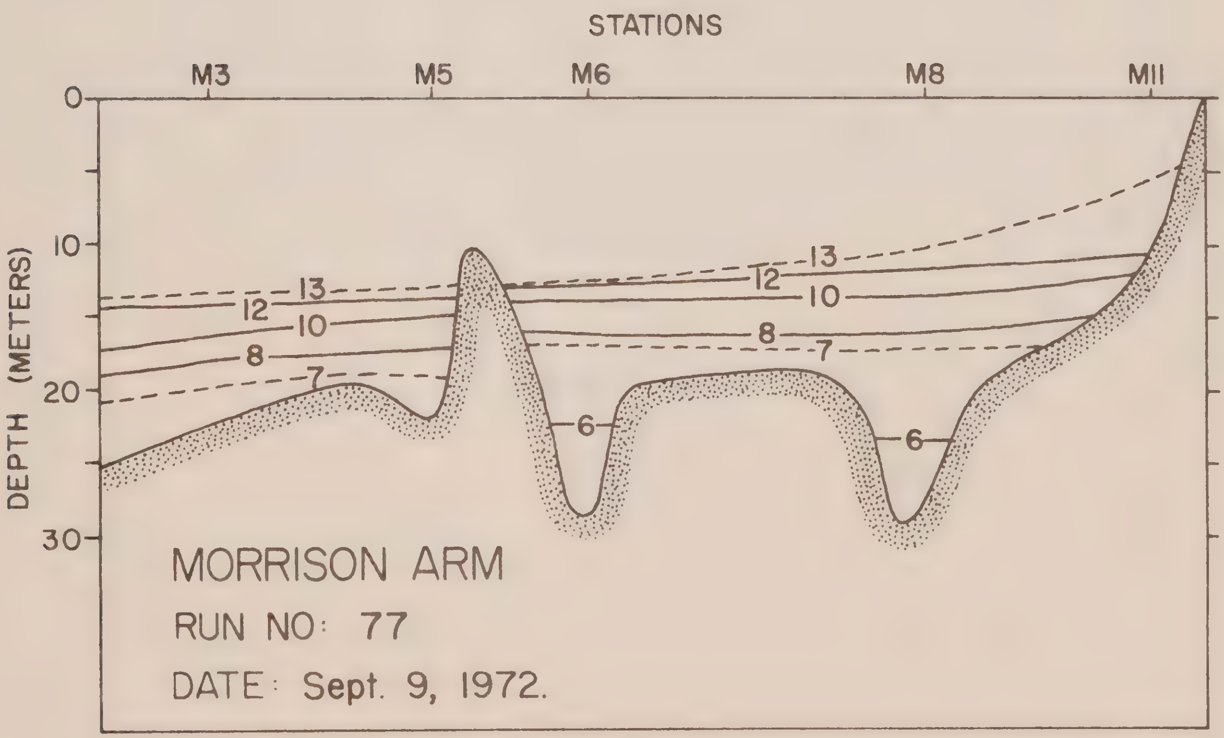

STATIONS
M3
M5
M6
M8
M11
DEPTH (METERS)
0
10
20
30
18
16
14
12
10
9
9
8
8
7
7
6
6
MORRISON ARM
RUN NO: 34
DATE: Aug. 5, 1972.

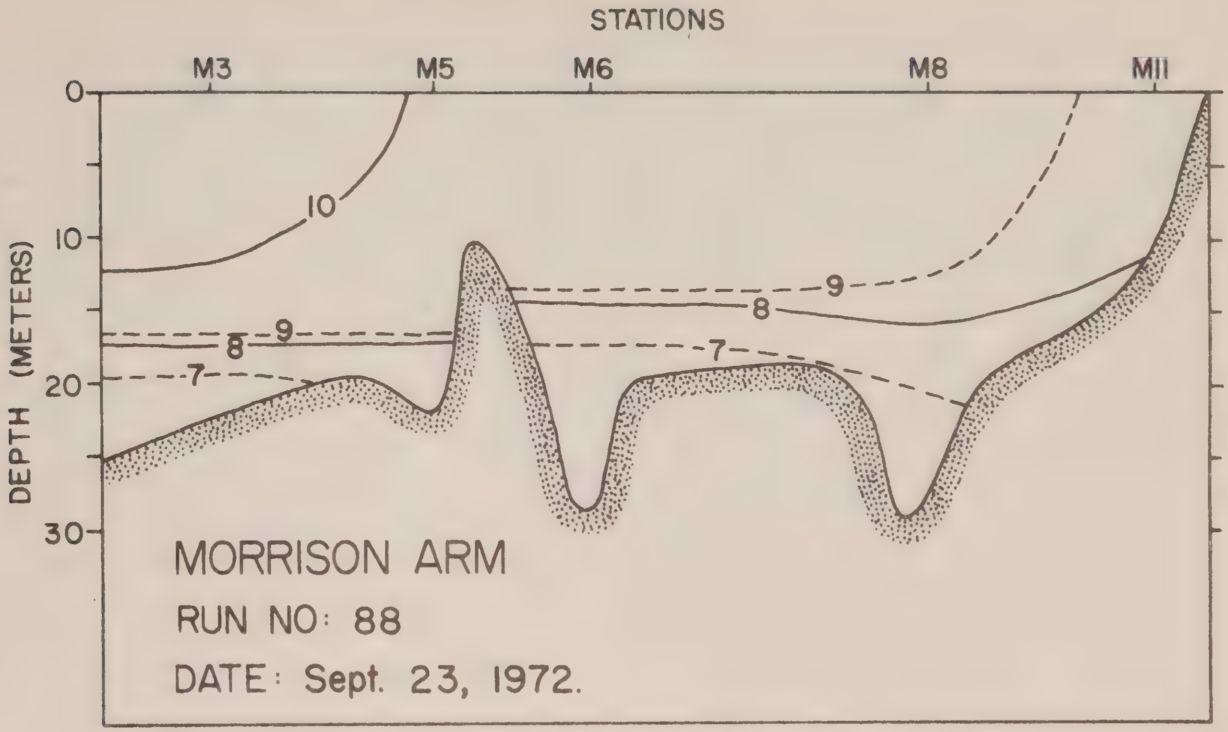

STATIONS
M3
M5
M6
M8
M11
DEPTH (METERS)
0
10
20
30
16
14
12
10
9
8
8
7
7
7
6
6
6
MORRISON ARM
RUN NO: 43
DATE: Aug. 12, 1972.

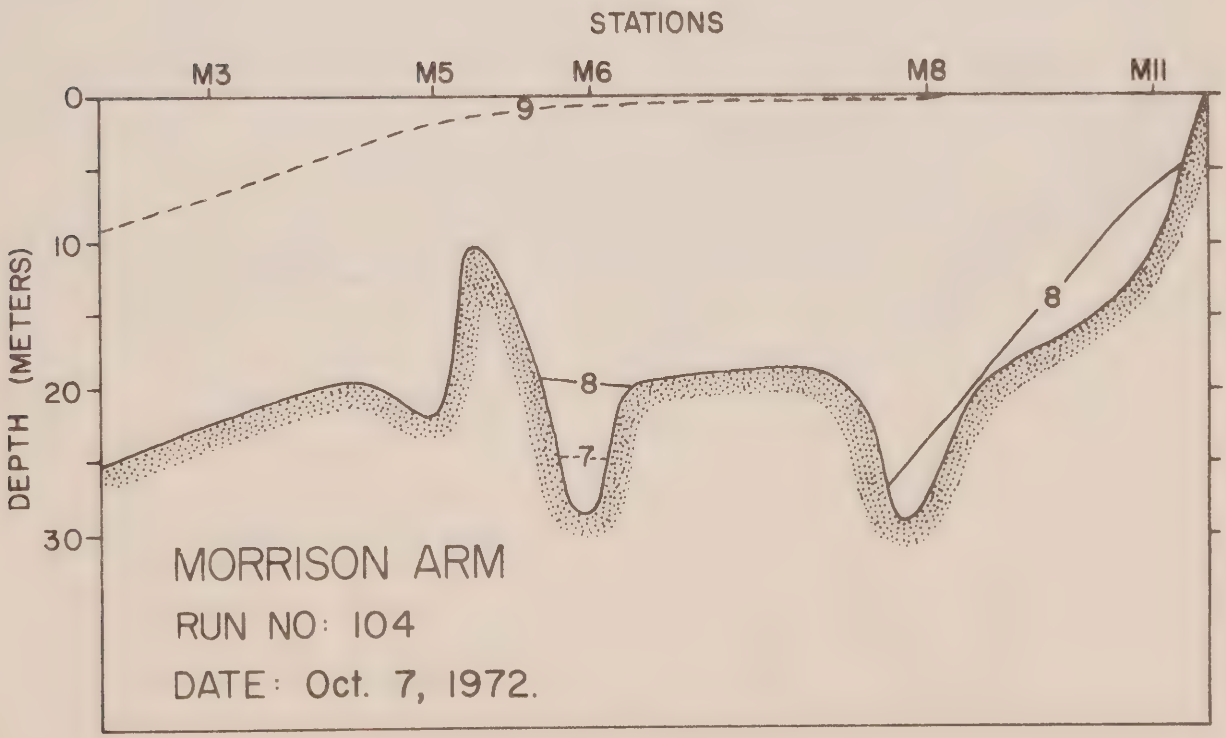

STATIONS
M3
M5
M6
M8
MII
0
10
20
30
DEPTH (METERS)
17
16
14
12
10
8
7
6
MORRISON ARM
RUN NO: 51
DATE: Aug. 19, 1972.

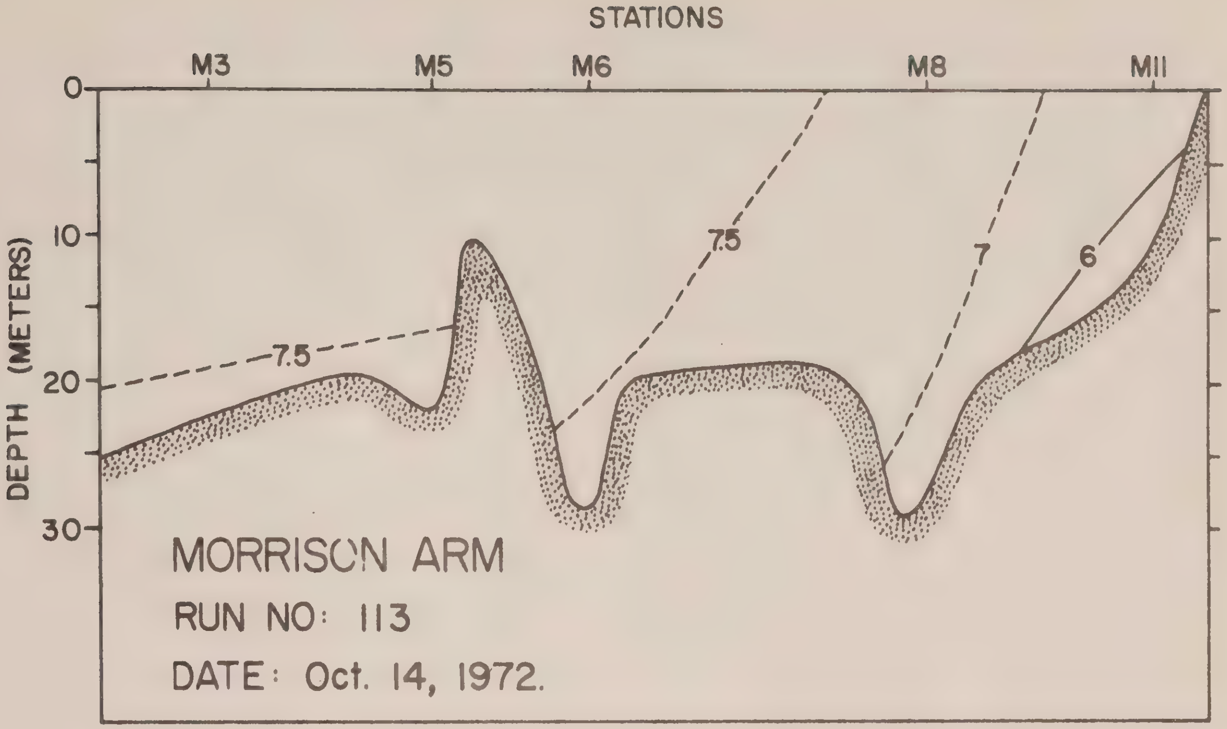

STATIONS
M3
M5
M6
M8
MII
0
10
20
30
DEPTH (METERS)
17
16
14
12
10
8
7
6
MORRISON ARM
RUN NO: 60
DATE: Aug. 26, 1972.

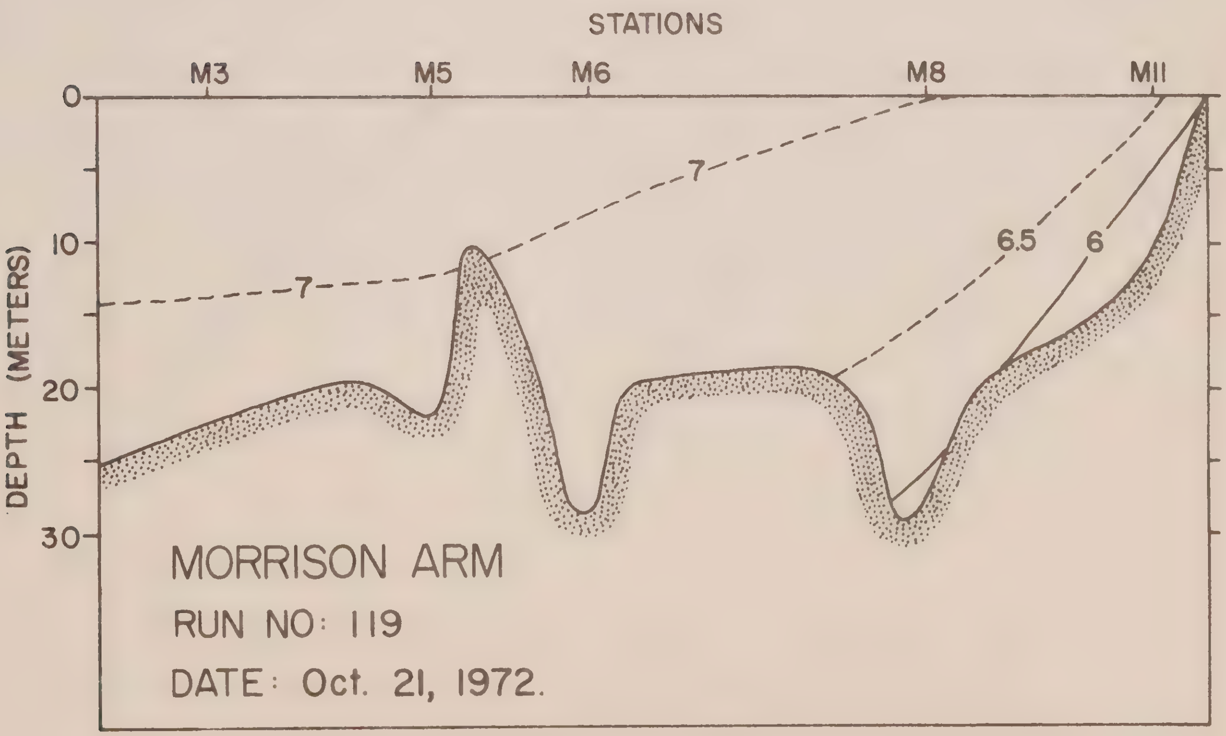

STATIONS
M3
M5
M6
M8
MII
DEPTH (METERS)
0
10
20
30
16
14
12
10
8
7
6
5
7
MORRISON ARM
RUN NO: 68
DATE: Sept. 2, 1972.

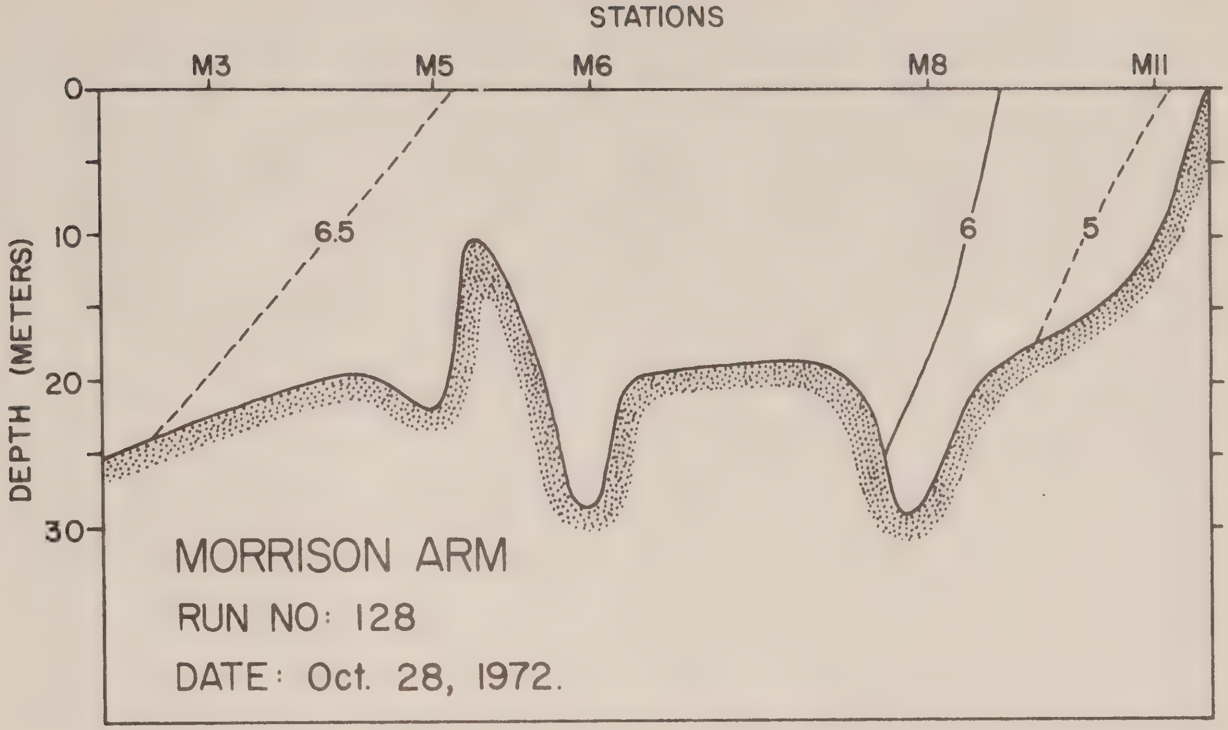

STATIONS
M3
M5
M6
M8
MII
DEPTH (METERS)
0
10
20
30
13
12
10
8
7
13
12
10
8
7
6
6
MORRISON ARM
RUN NO: 77
DATE: Sept. 9, 1972.

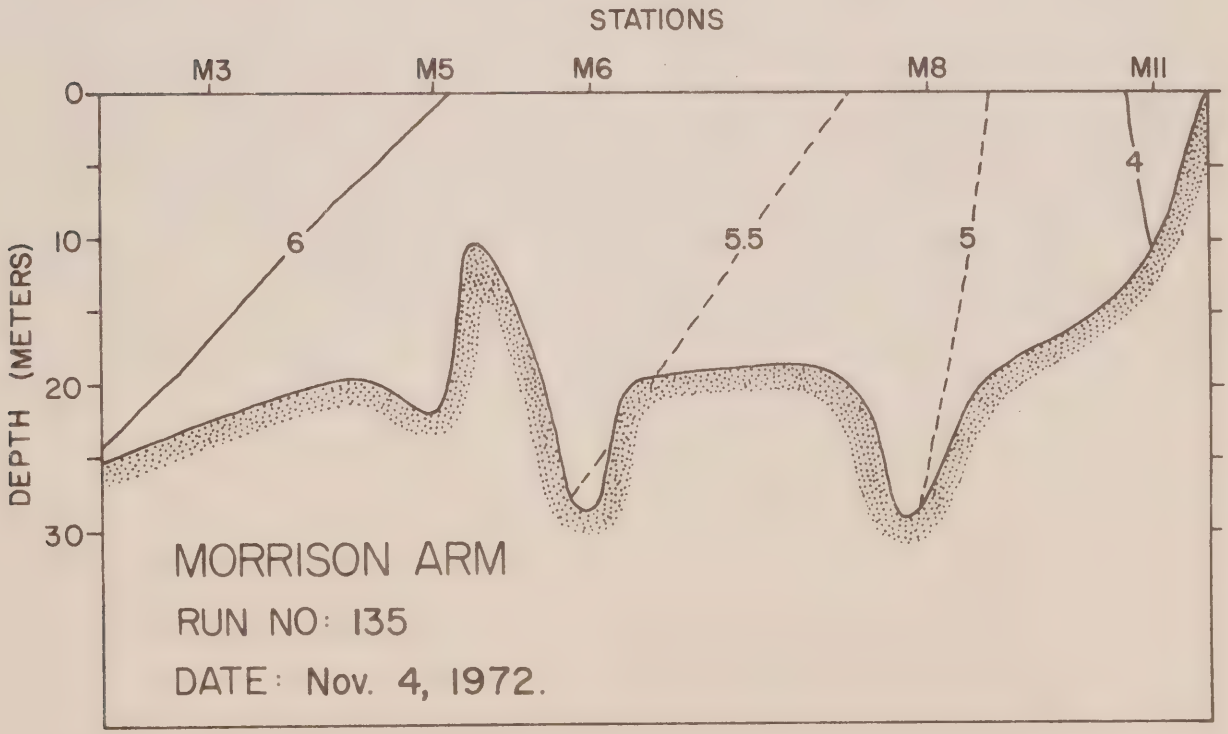

STATIONS
M3
M5
M6
M8
MII
DEPTH (METERS)
0
10
20
30
10
9
8
7
MORRISON ARM
RUN NO: 88
DATE: Sept. 23, 1972.

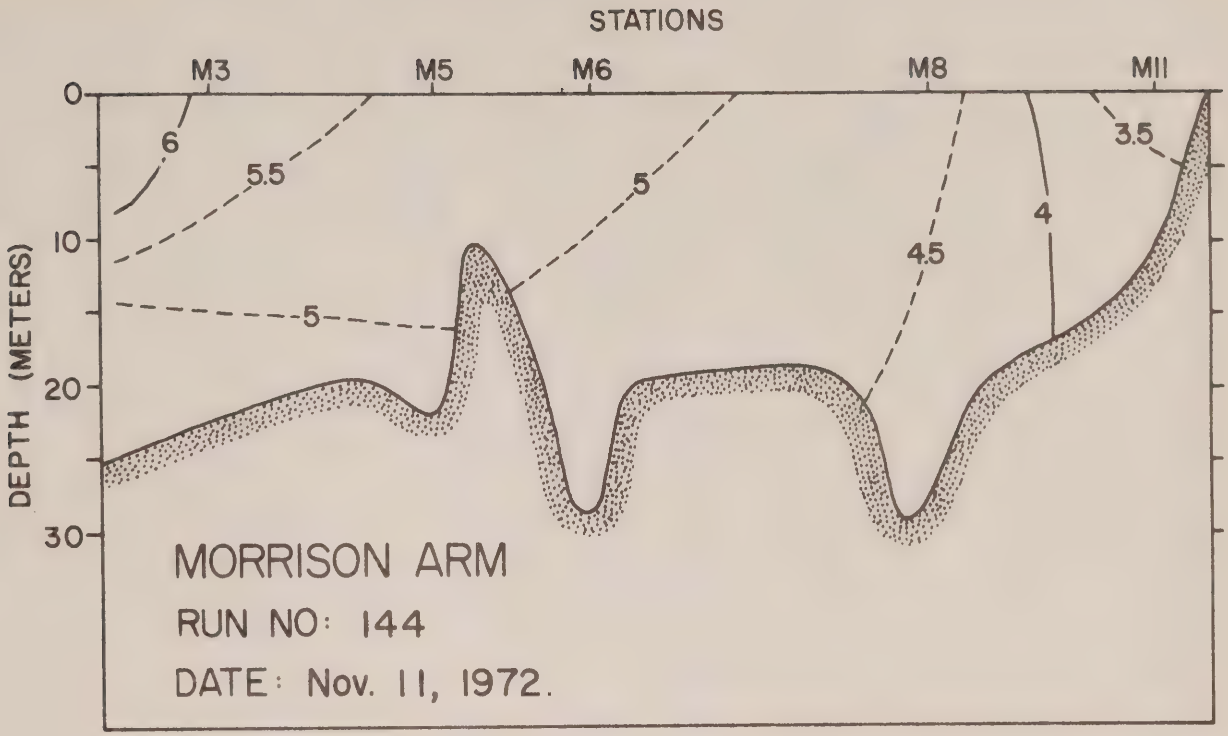

STATIONS
M3
M5
M6
M8
MII
DEPTH (METERS)
0
10
20
30
9
8
7
MORRISON ARM
RUN NO: 104
DATE: Oct. 7, 1972.

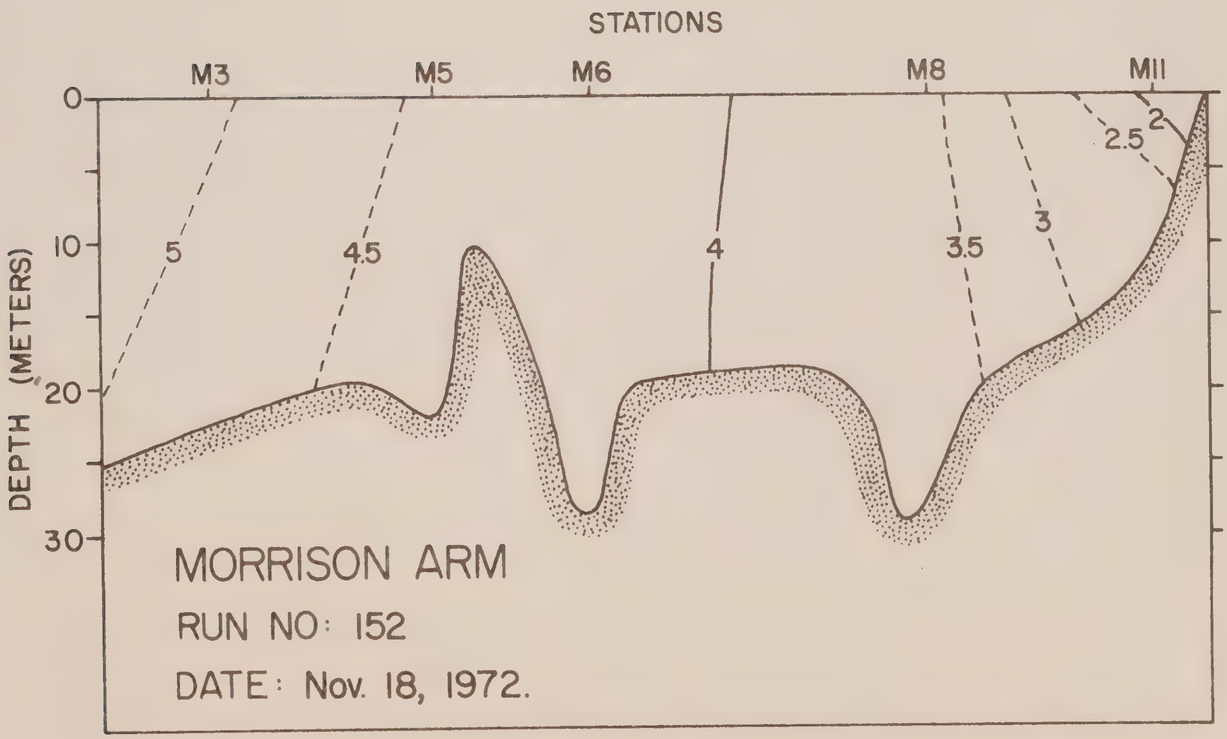

STATIONS
M3
M5
M6
M8
M11
0
10
20
30
DEPTH (METERS)
7.5
7.5
7
6
MORRISON ARM
RUN NO: 113
DATE: Oct. 14, 1972.

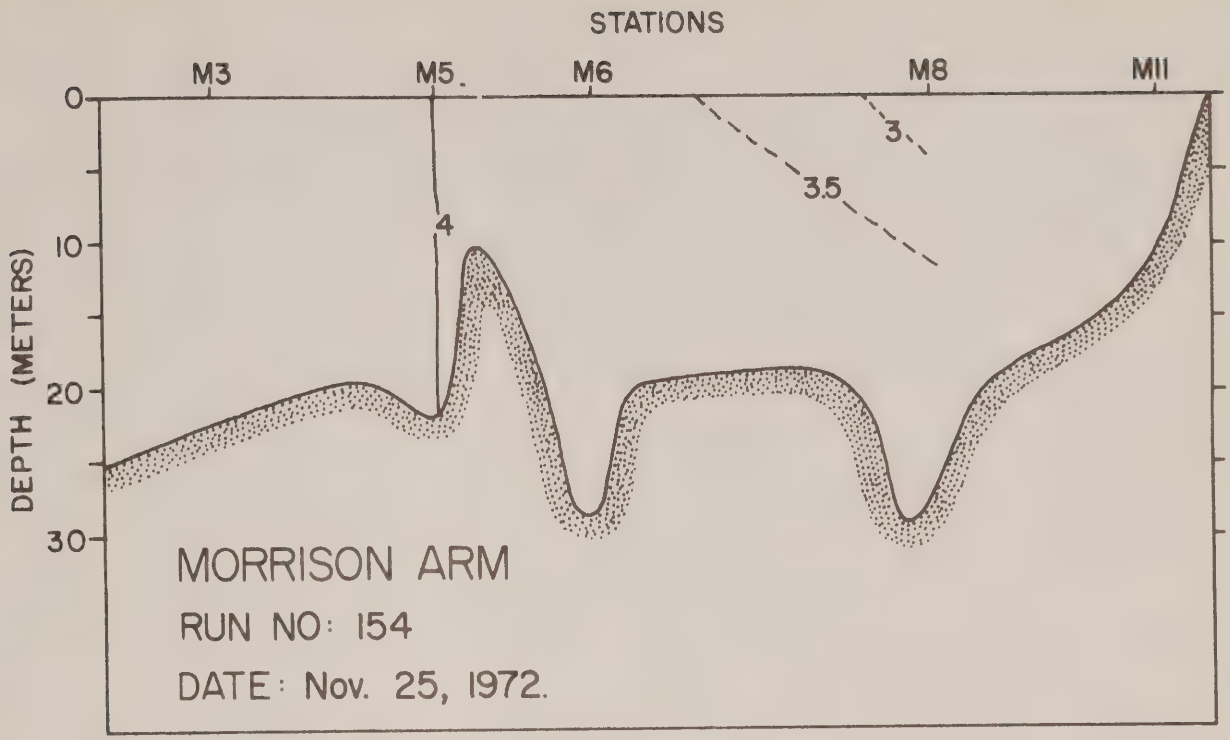

STATIONS
M3
M5
M6
M8
M11
0
10
20
30
DEPTH (METERS)
7
7
6.5
6
MORRISON ARM
RUN NO: 119
DATE: Oct. 21, 1972.


STATIONS
M3
M5
M6
M8
MII
0
10
20
30
DEPTH (METERS)
6.5
6
5
MORRISON ARM
RUN NO: 128
DATE: Oct. 28, 1972.


STATIONS
M3
M5
M6
M8
MII
0
10
20
30
DEPTH (METERS)
6
5.5
5
4
MORRISON ARM
RUN NO: 135
DATE: Nov. 4, 1972.


STATIONS
M3
M5
M6
M8
MII
0
10
20
30
DEPTH (METERS)
6
5.5
5
5
4.5
4
3.5
MORRISON ARM
RUN NO: 144
DATE: Nov. 11, 1972.


STATIONS
M3
M5
M6
M8
MII
0
10
20
30
DEPTH (METERS)
5
4.5
4
3.5
3
2.5
2
MORRISON ARM
RUN NO: 152
DATE: Nov. 18, 1972.


STATIONS
M3
M5.
M6
M8
MII
0
10
20
30
DEPTH (METERS)
4
3.5
3
MORRISON ARM
RUN NO: 154
DATE: Nov. 25, 1972.

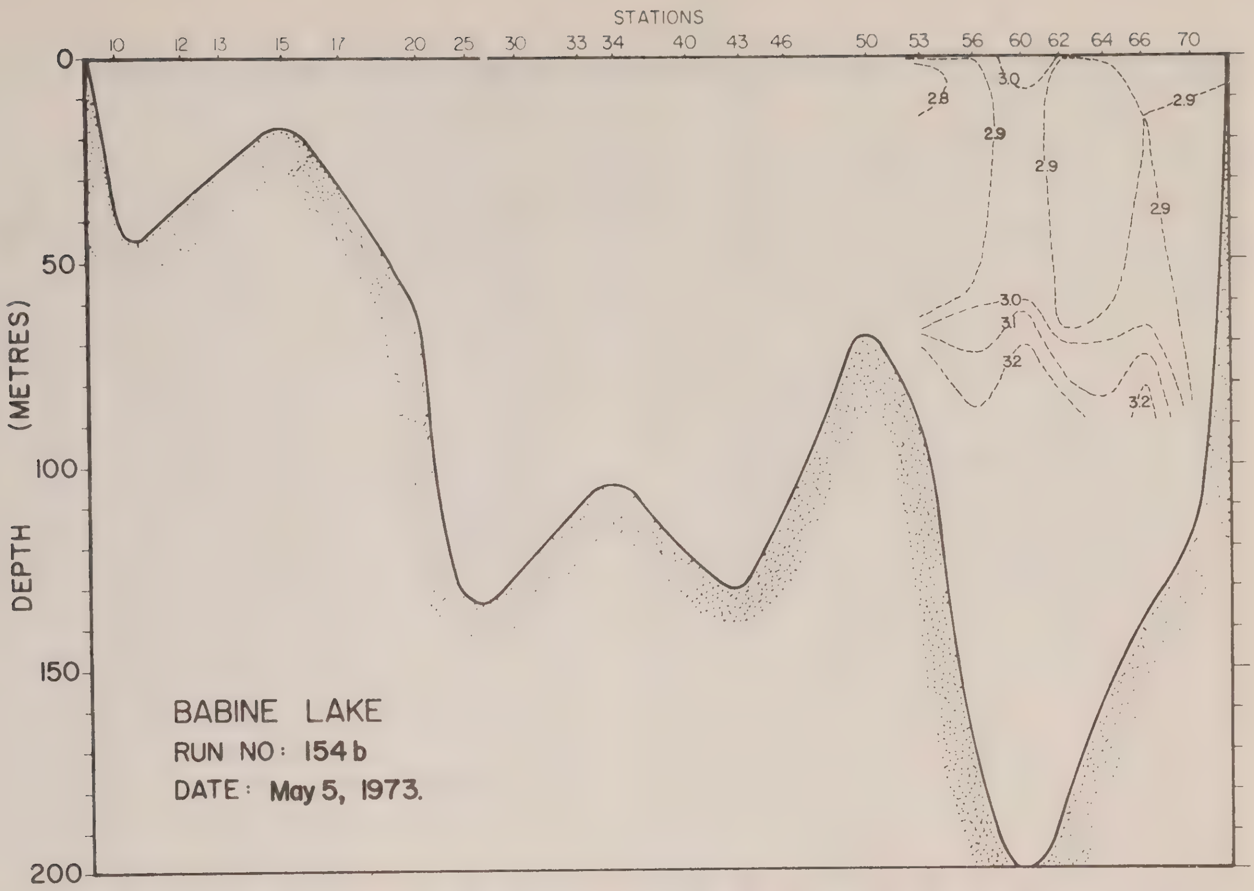
ISOTHERM PLOTS OF BABINE LAKE DURING THE ICE-FREE SEASON

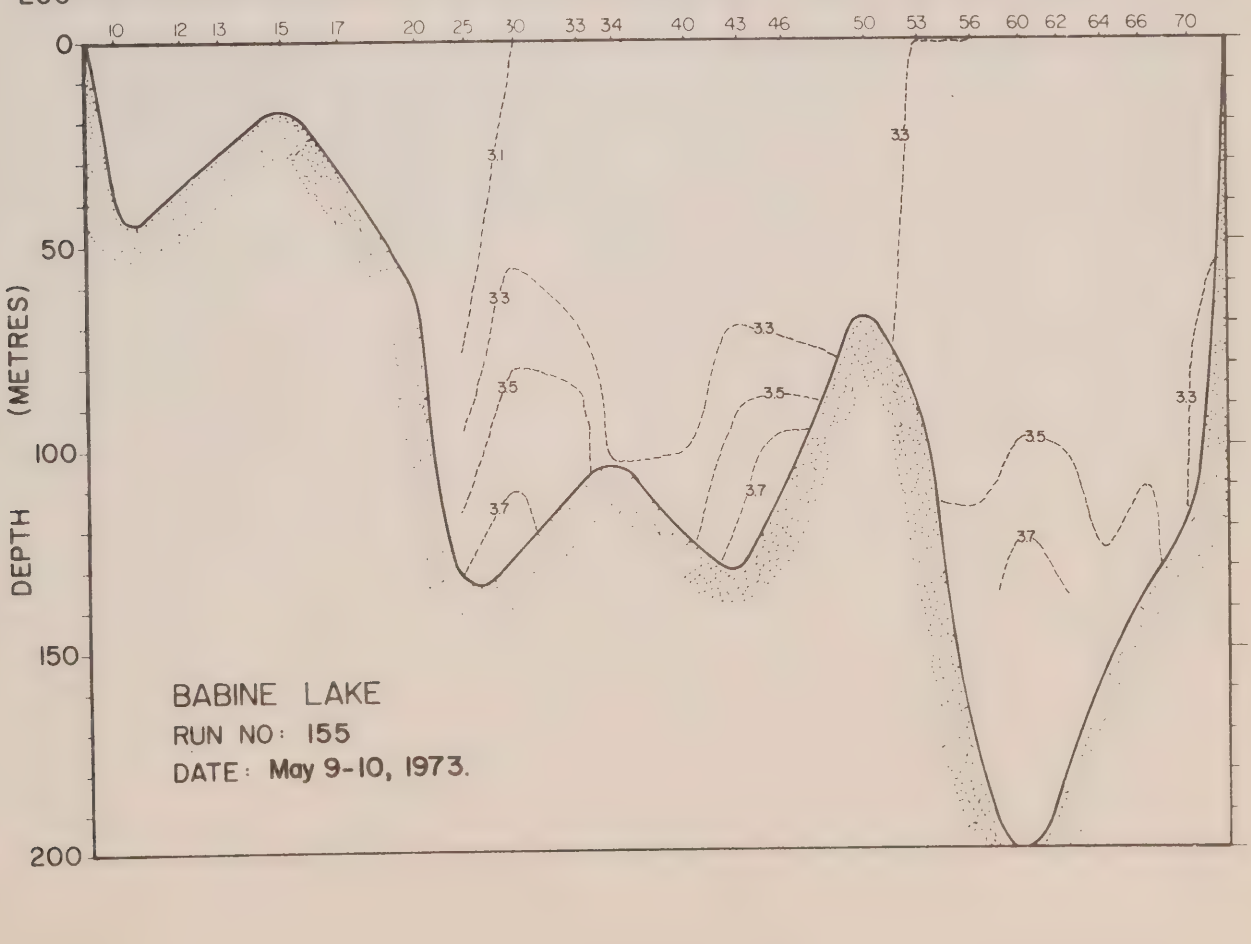
PART 2, 1973

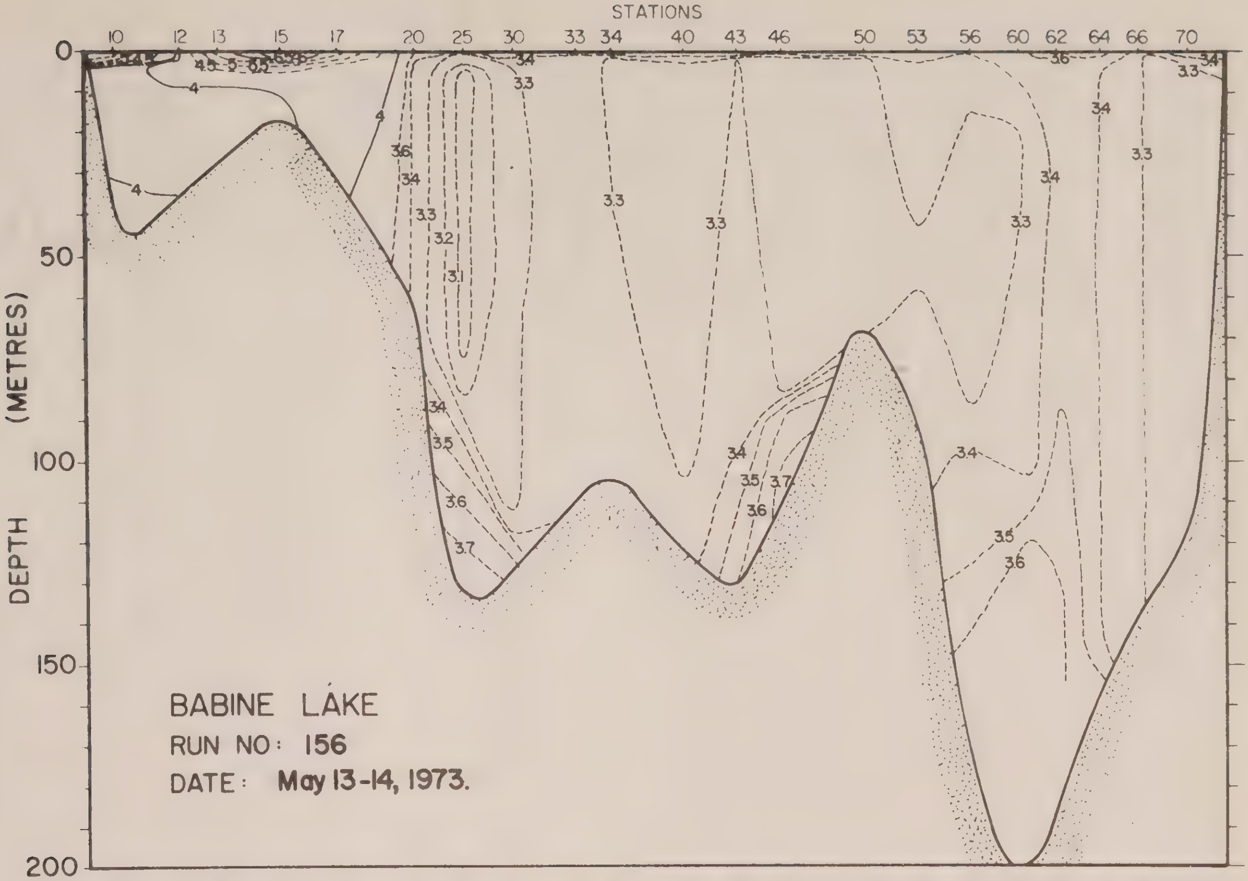
LIST OF FIGURES

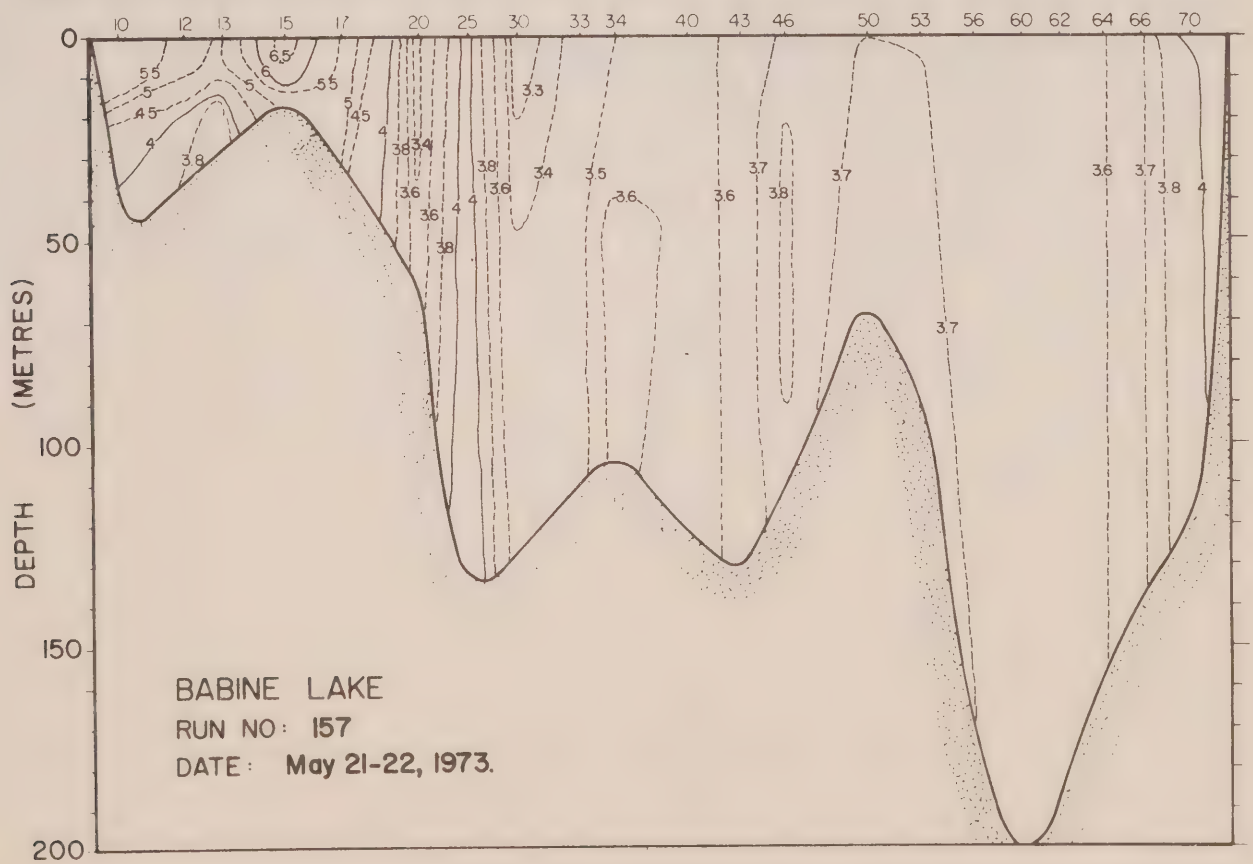
Isotherm Plots 1973

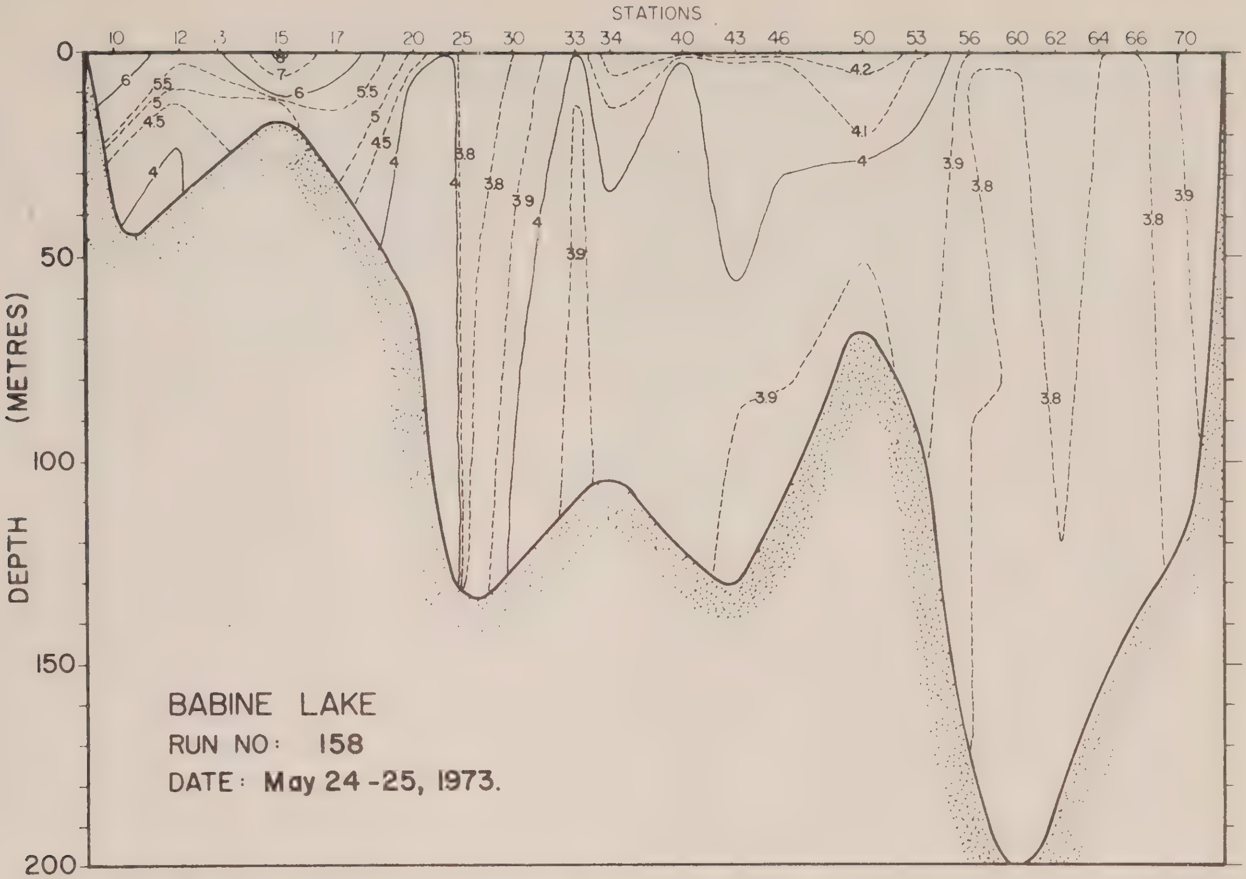
MAIN LAKE (MAY 5 - OCTOBER 31)

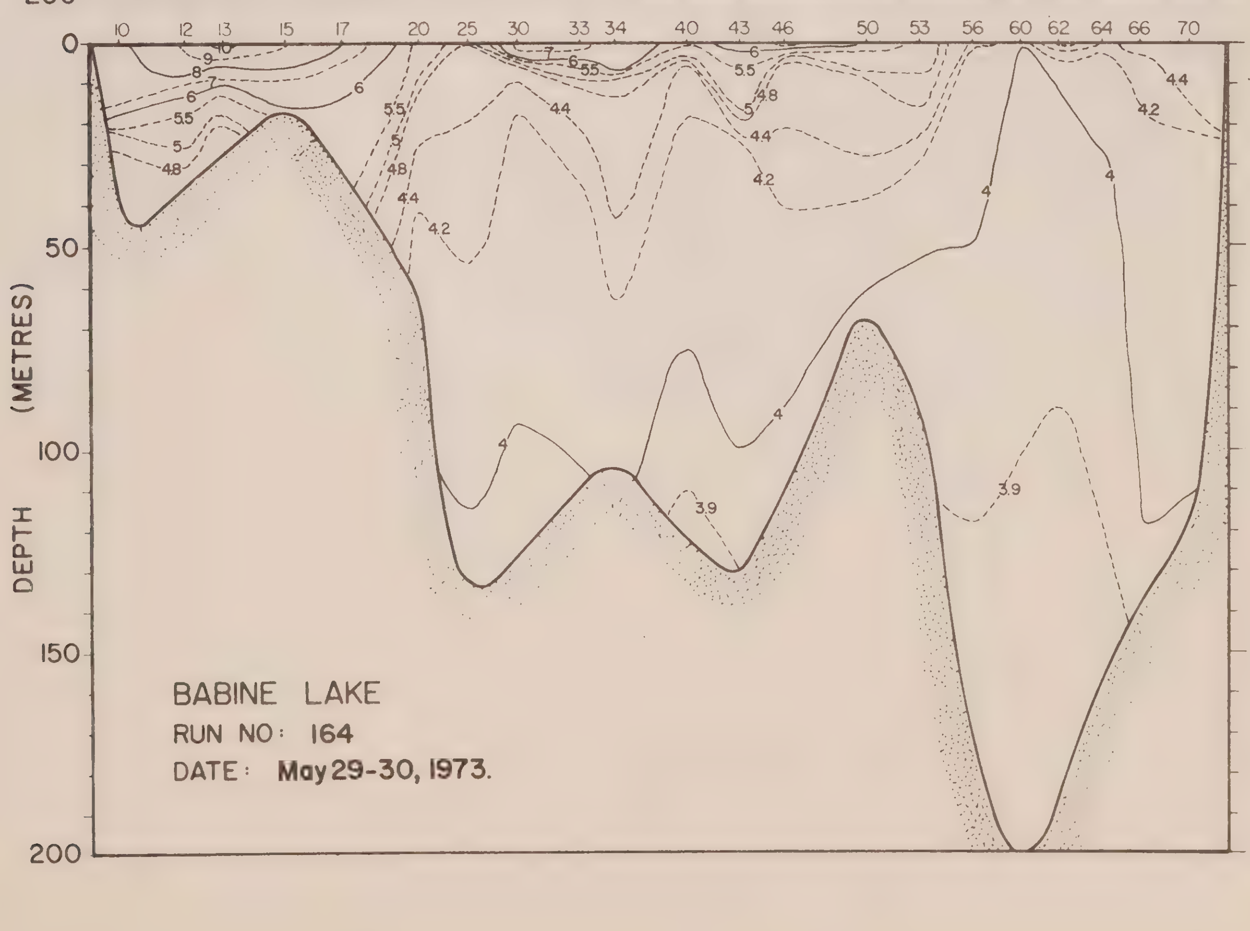

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
2.8
3.0
2.9
2.9
2.9
2.9
3.0
3.1
3.2
3.2
BABINE LAKE
RUN NO: 154 b
DATE: May 5, 1973.

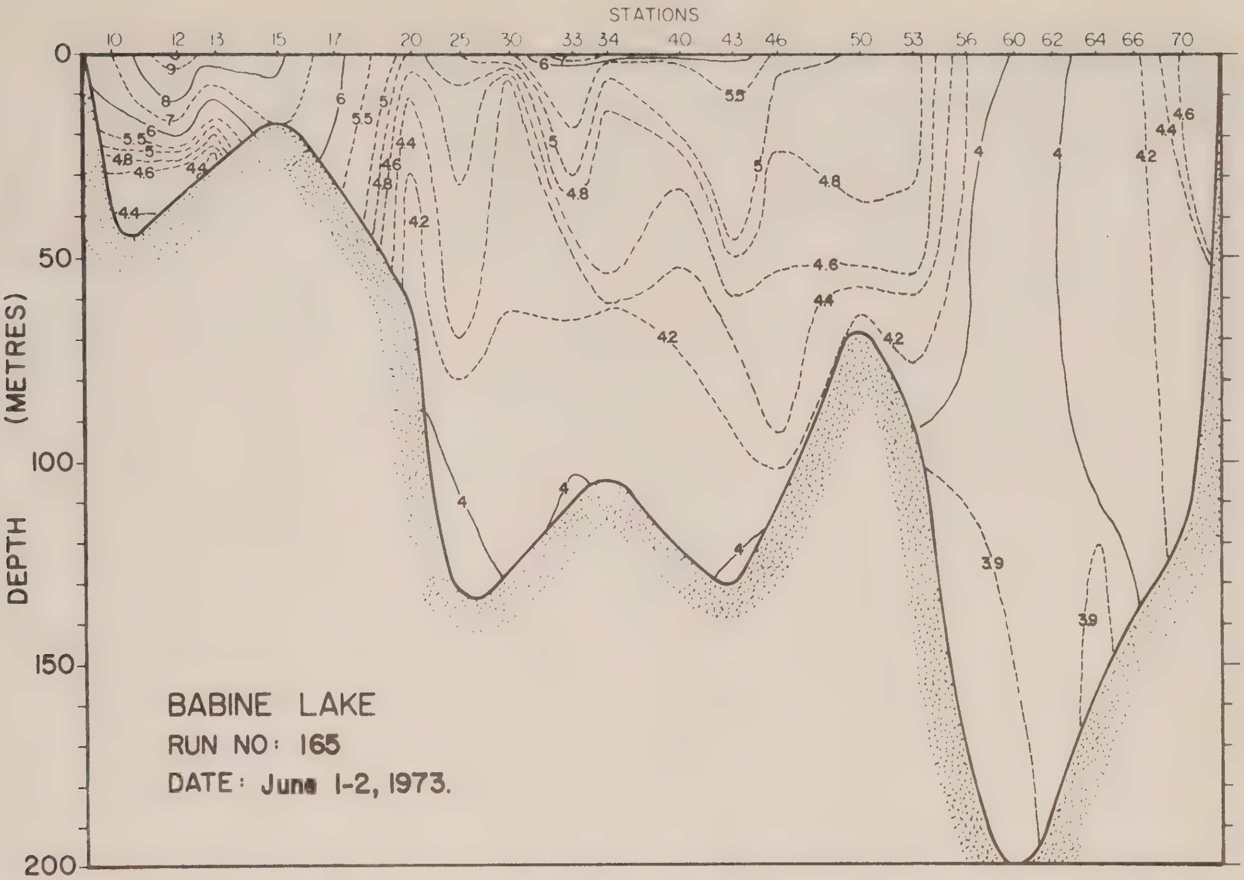

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
3.1
3.3
3.3
3.5
3.7
3.3
3.5
3.7
3.5
3.7
3.3
BABINE LAKE
RUN NO: 155
DATE: May 9-10, 1973.

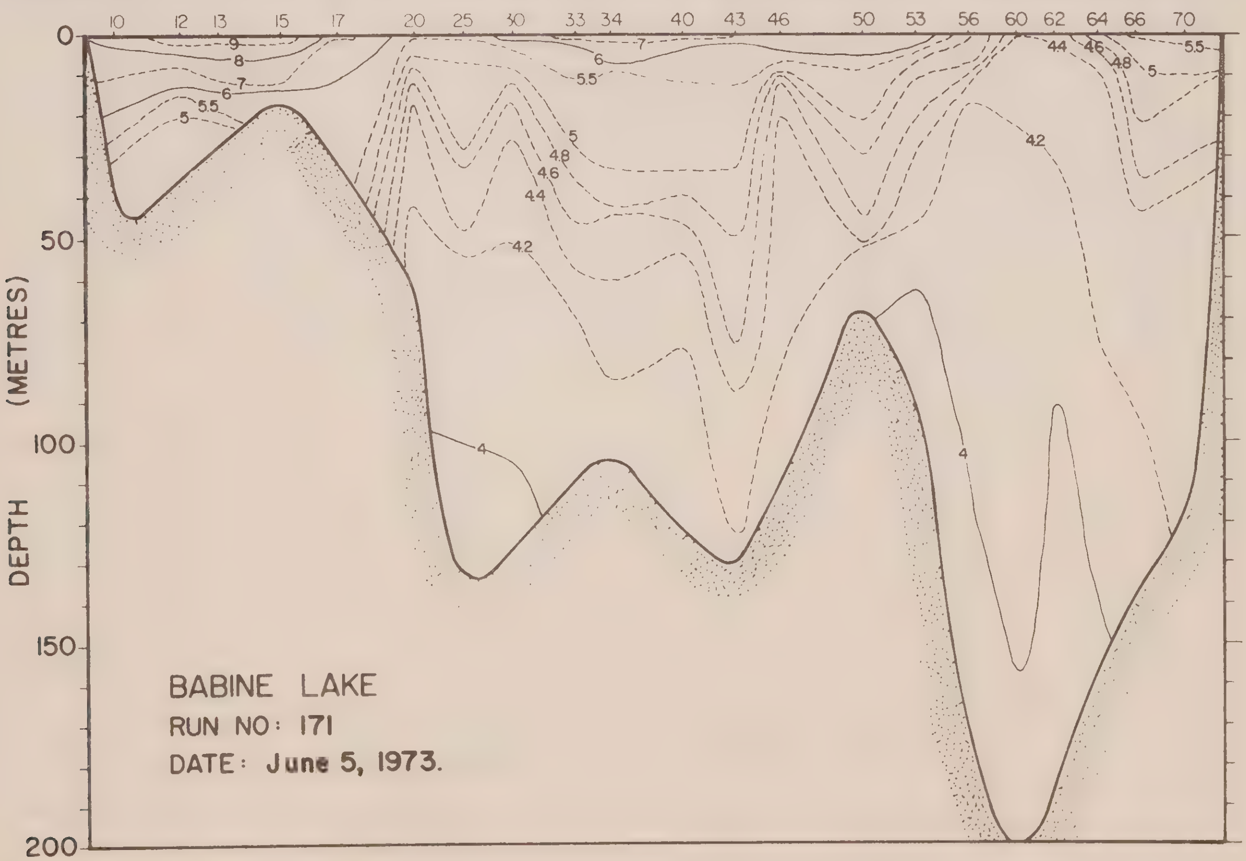

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 156
DATE: May 13-14, 1973.

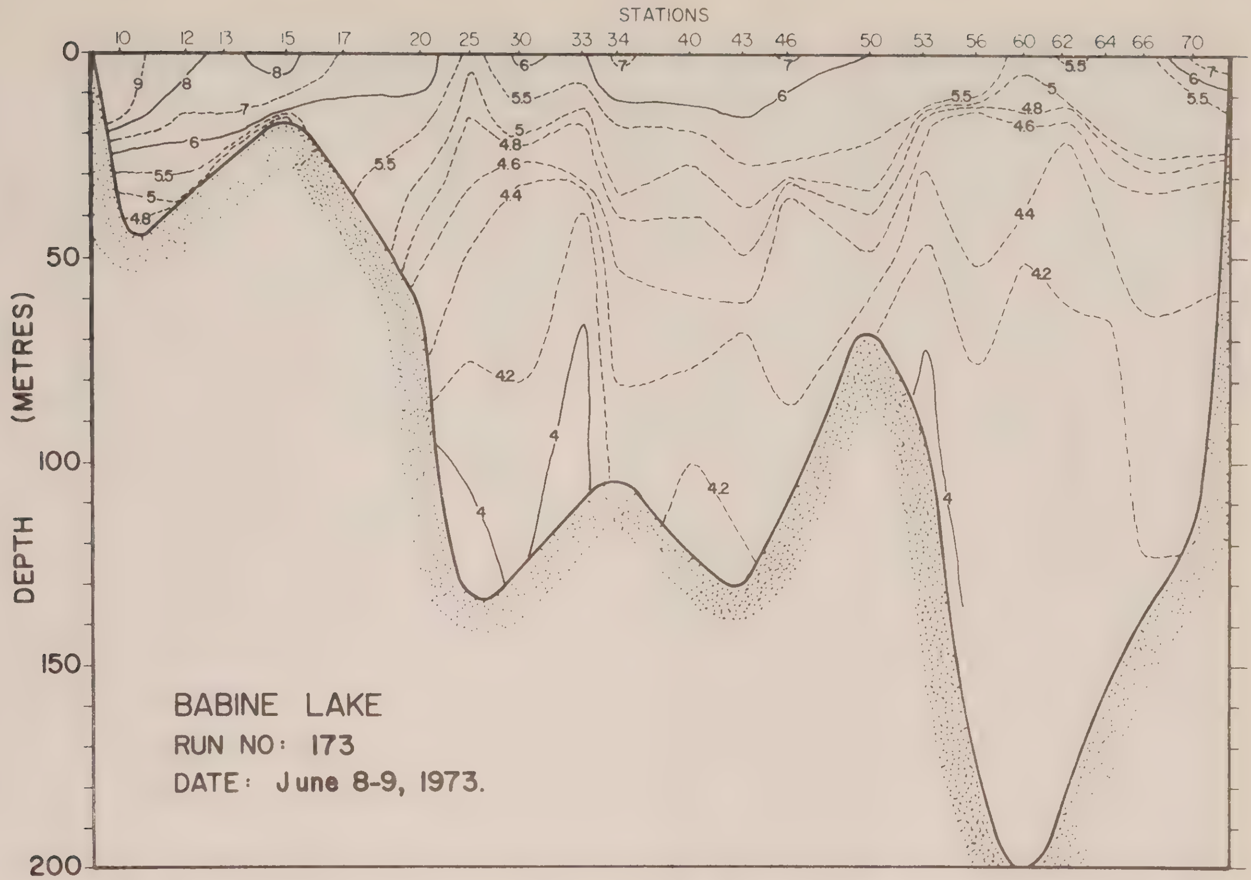

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 157
DATE: May 21-22, 1973.

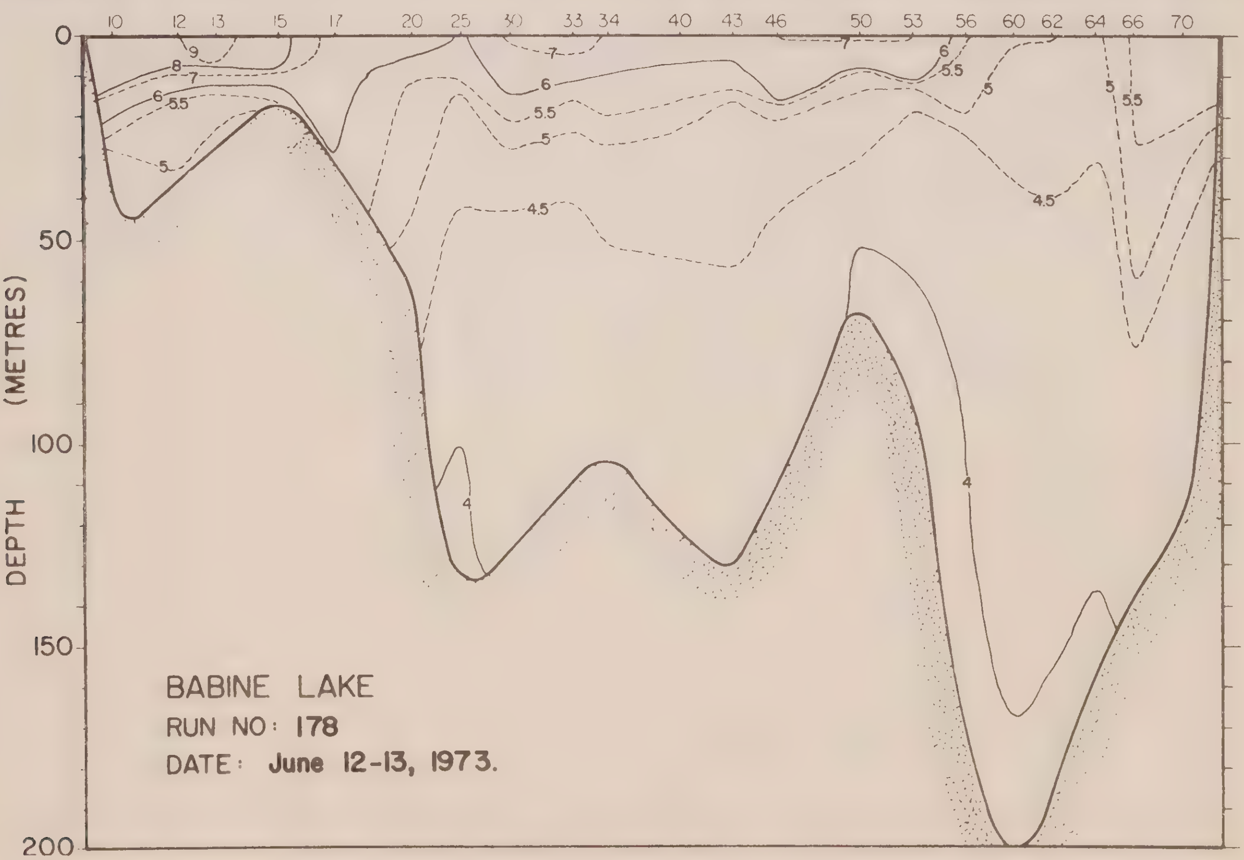

STATIONS
DEPTH (METRES)
BABINE LAKE
RUN NO: 158
DATE: May 24-25, 1973.

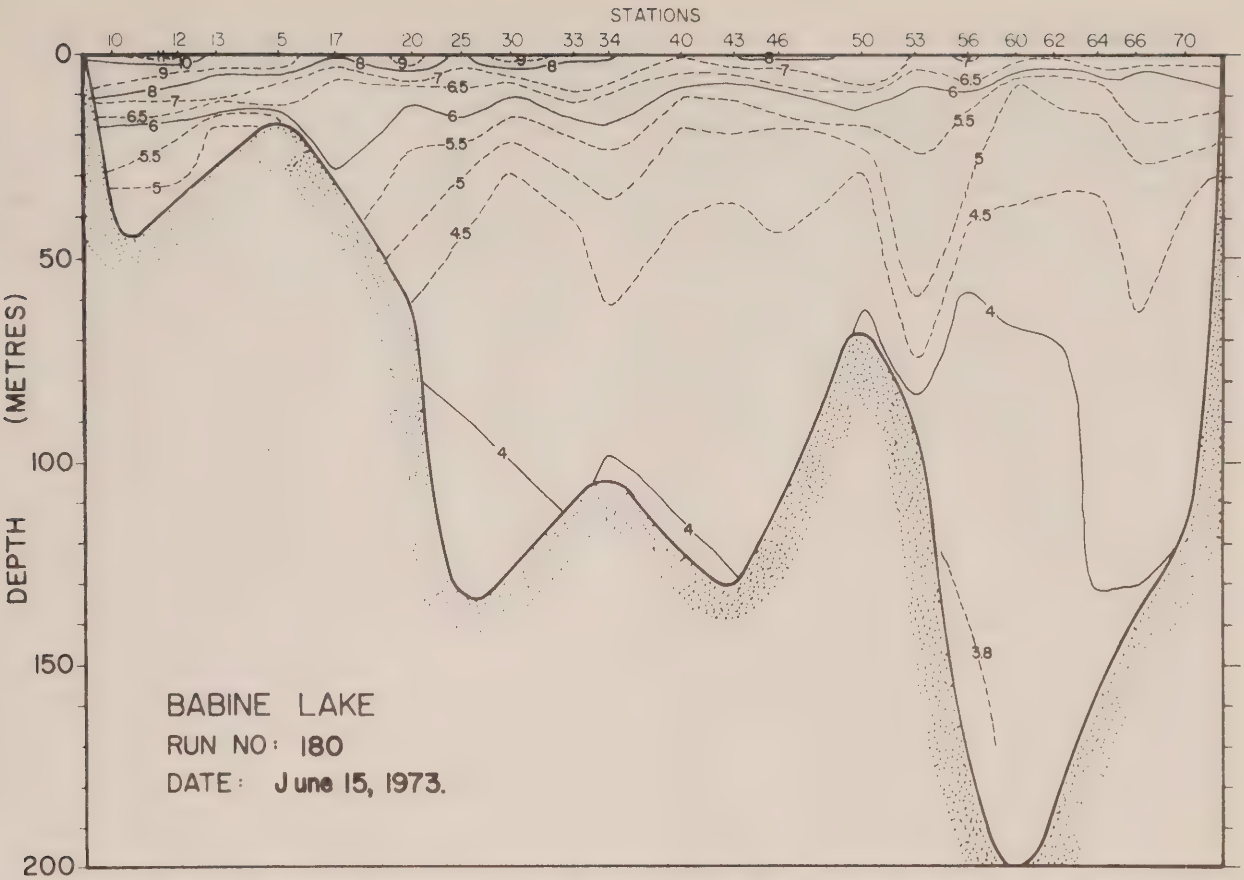

DEPTH (METRES)
BABINE LAKE
RUN NO: 164
DATE: May 29-30, 1973.

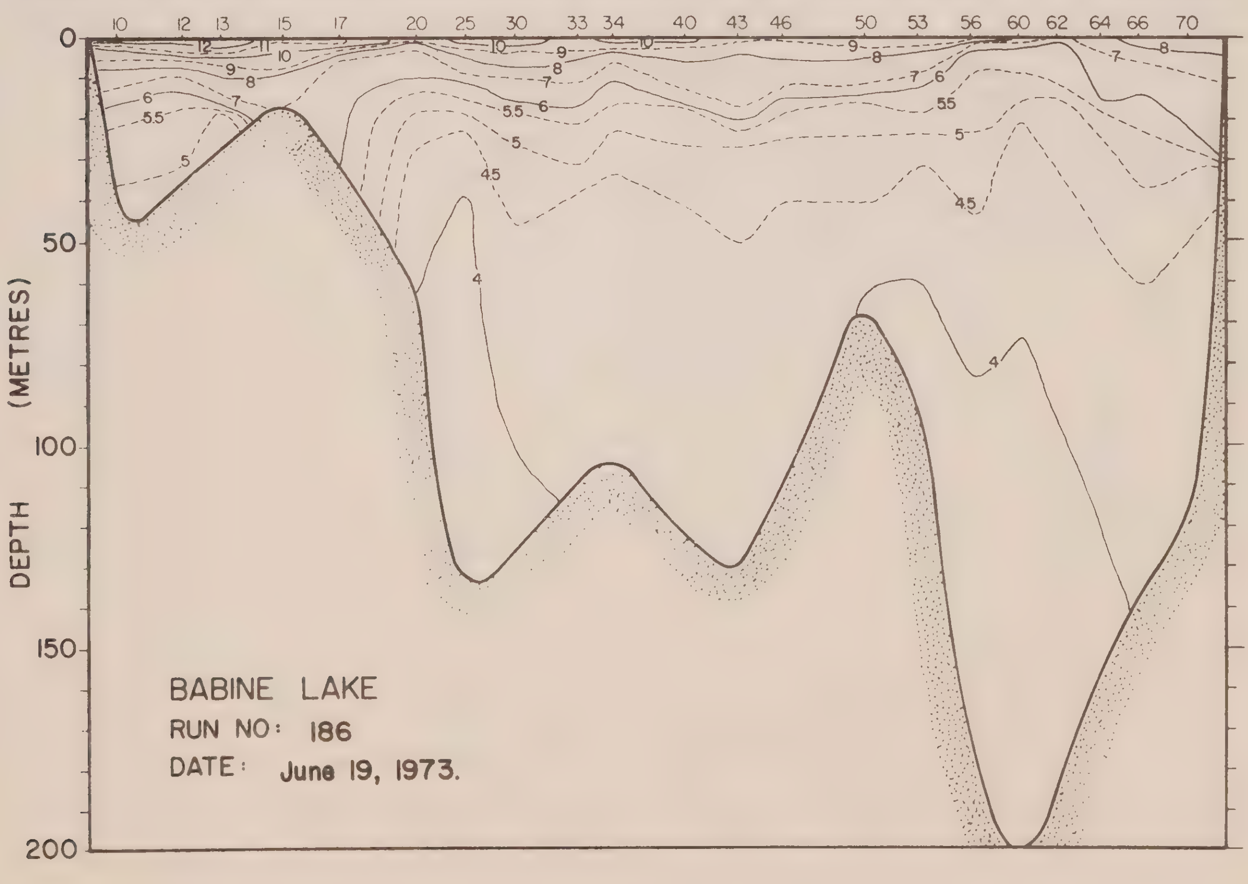

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
50
100
150
200
DEPTH (METRES)
BABINE LAKE
RUN NO: 165
DATE: June 1-2, 1973.

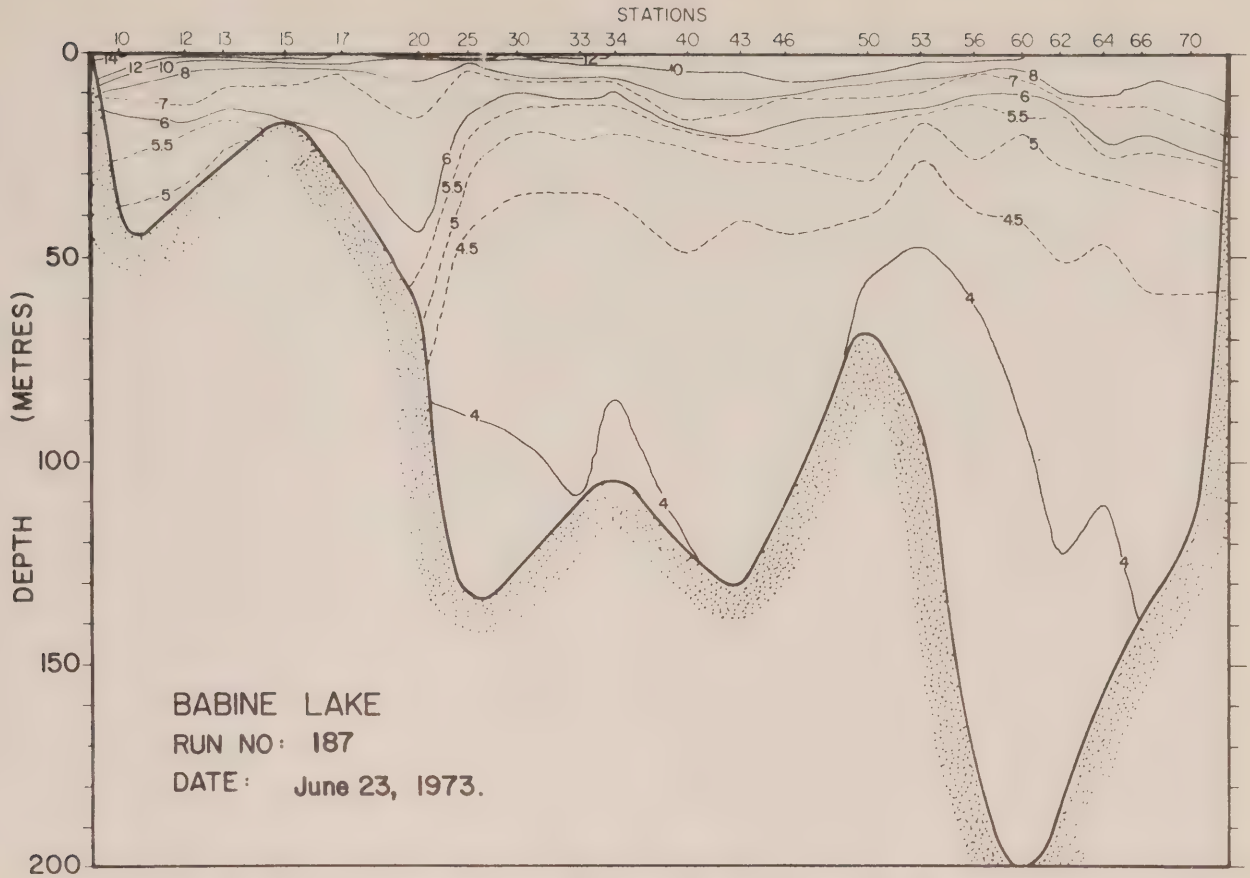

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
50
100
150
200
DEPTH (METRES)
BABINE LAKE
RUN NO: 171
DATE: June 5, 1973.

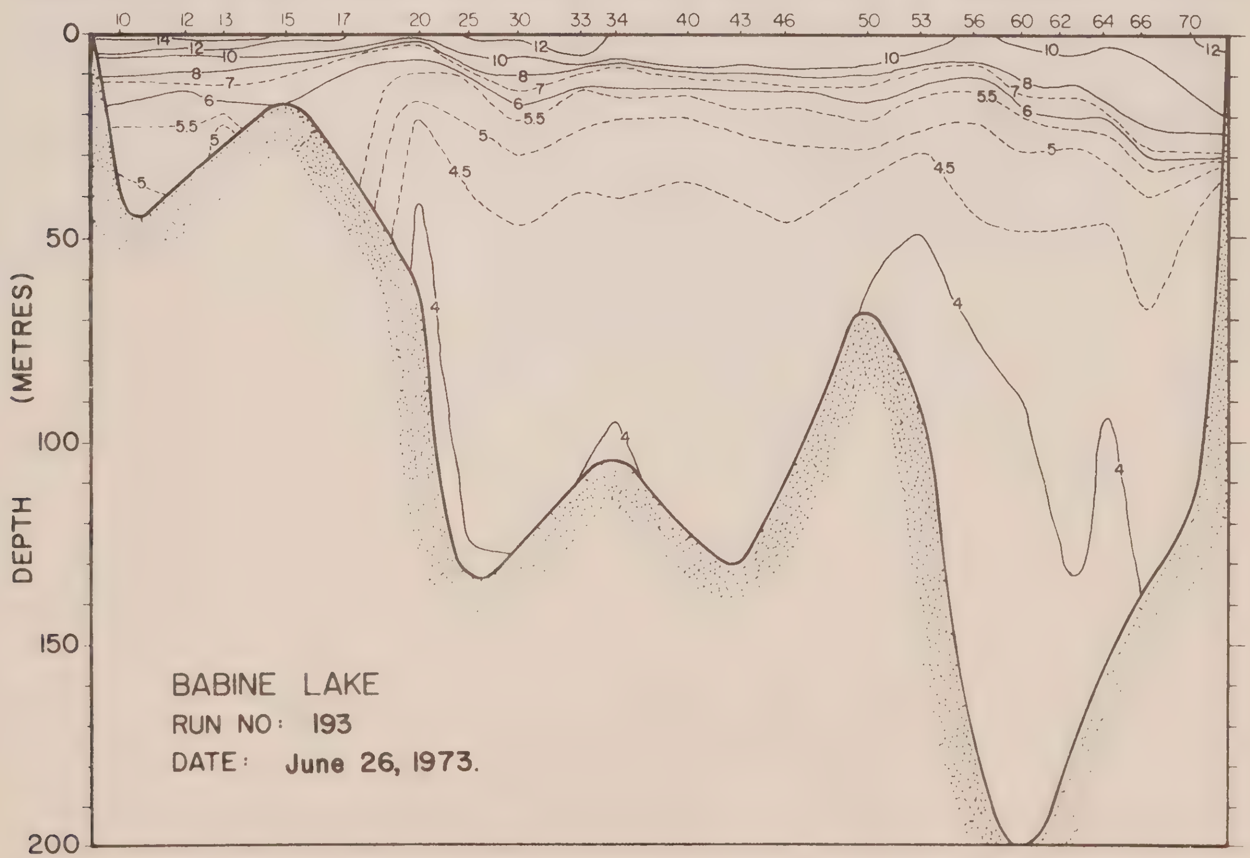

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 173
DATE: June 8-9, 1973.

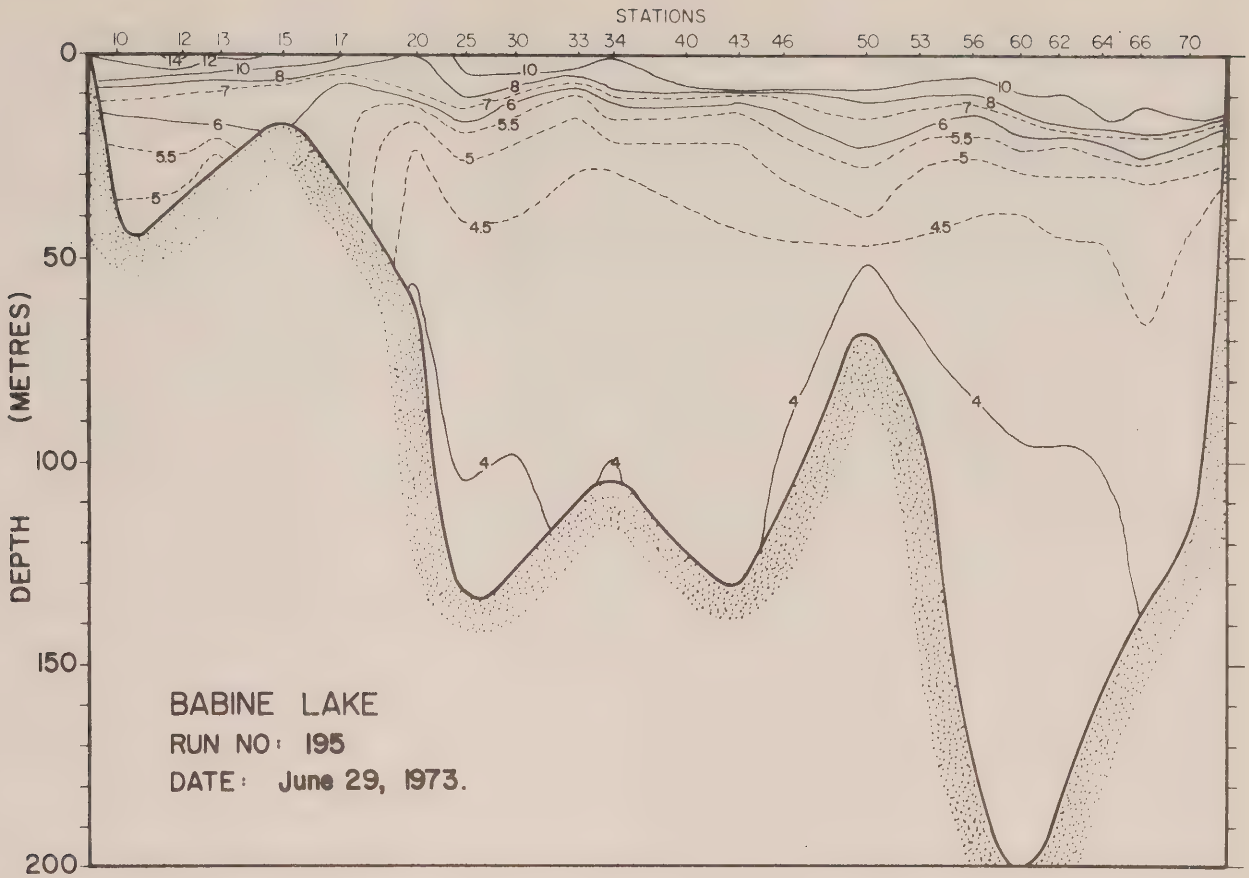

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 178
DATE: June 12-13, 1973.

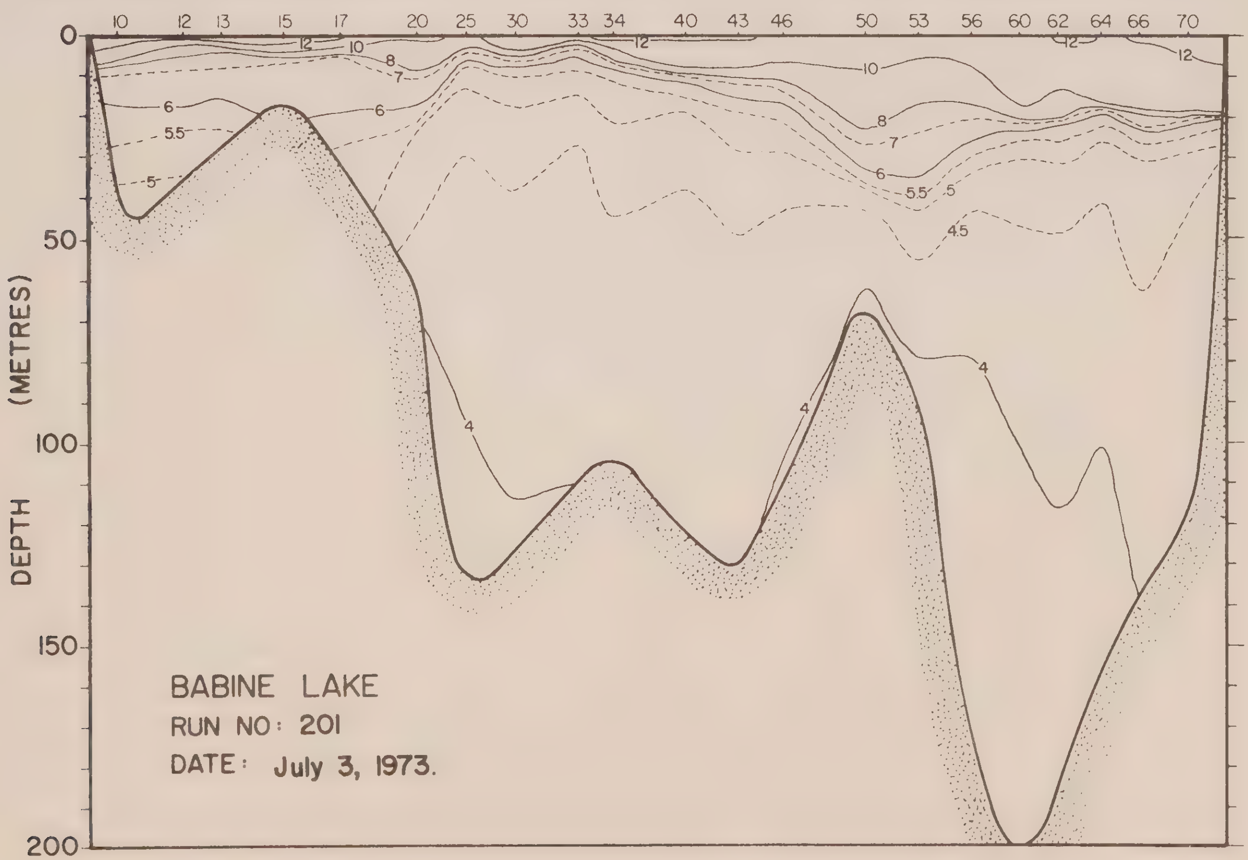

STATIONS
DEPTH (METRES)
BABINE LAKE
RUN NO: 180
DATE: June 15, 1973.

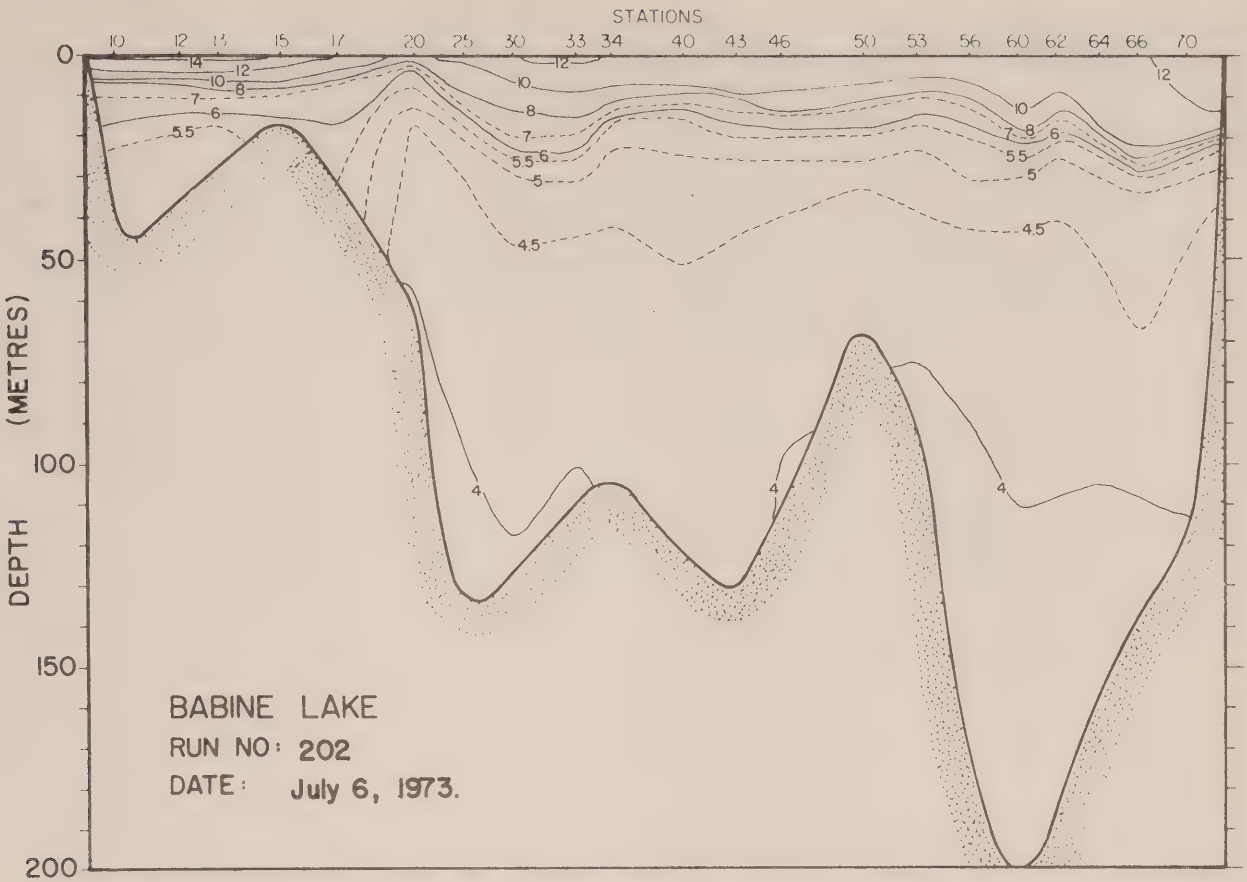

DEPTH (METRES)
BABINE LAKE
RUN NO: 186
DATE: June 19, 1973.

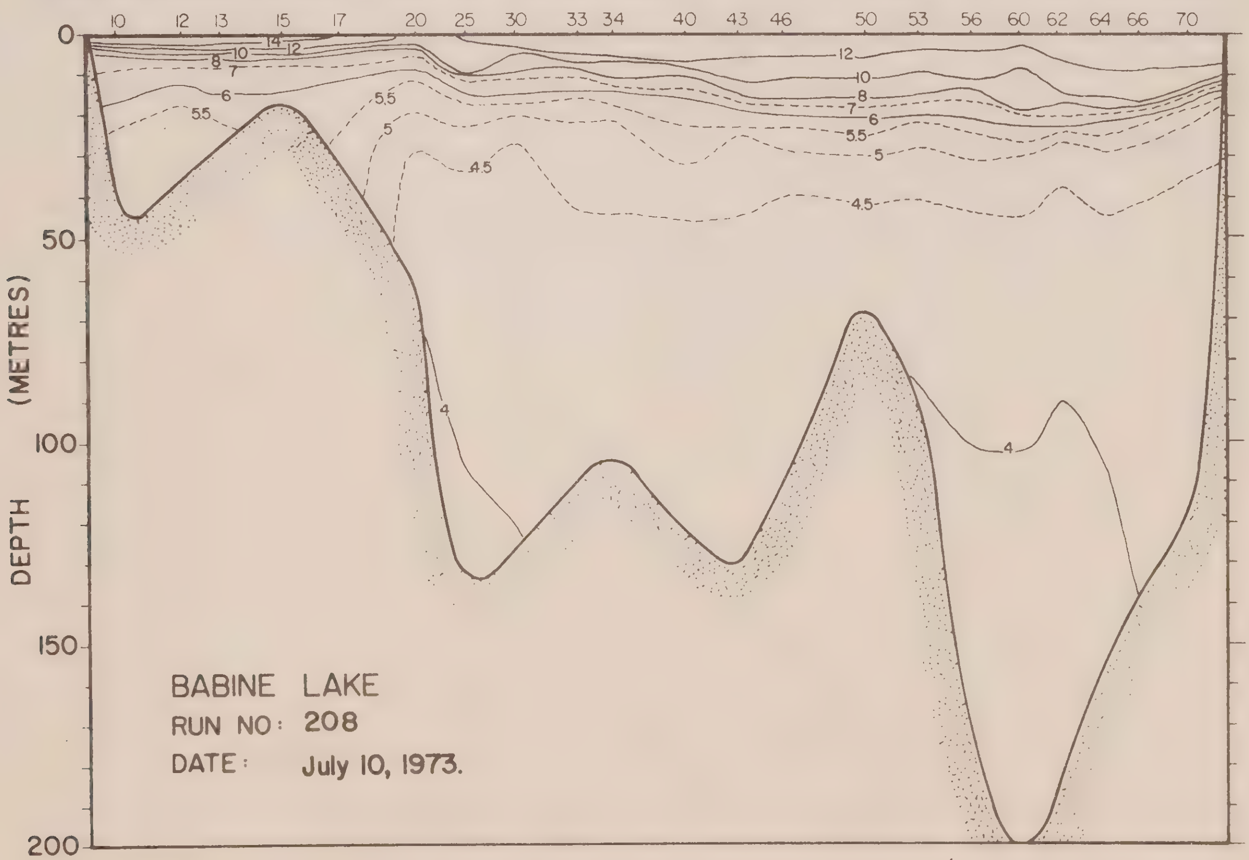

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
50
100
150
200
DEPTH (METRES)
BABINE LAKE
RUN NO: 187
DATE: June 23, 1973.

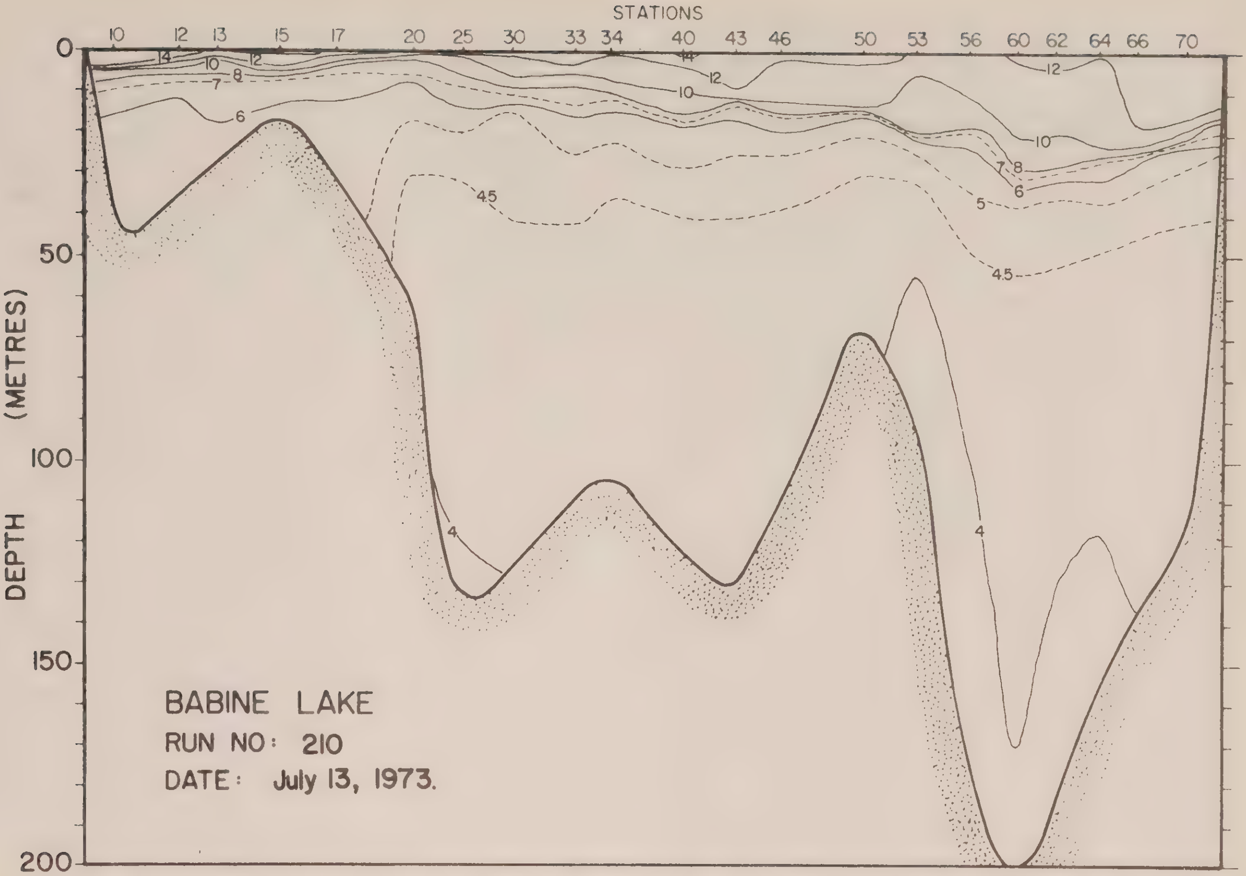

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
50
100
150
200
DEPTH (METRES)
BABINE LAKE
RUN NO: 193
DATE: June 26, 1973.

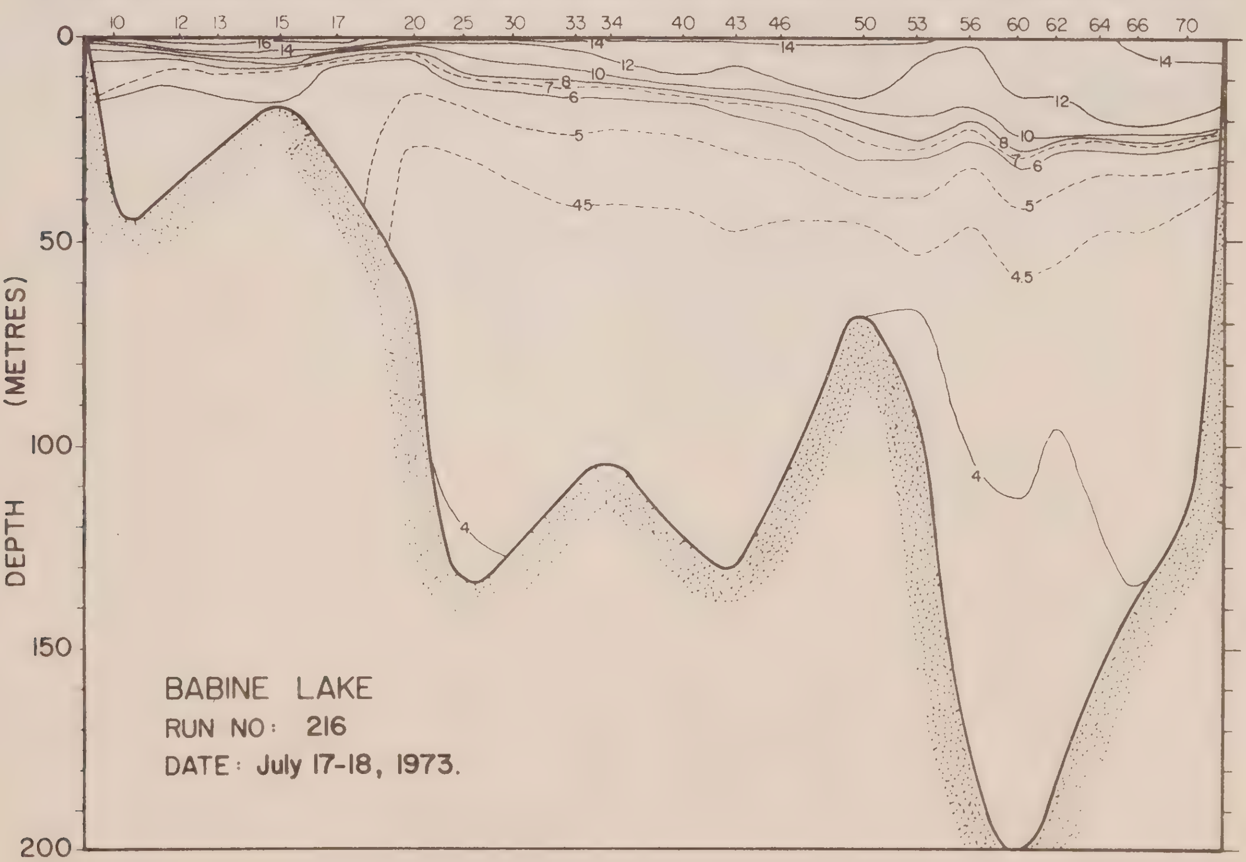

STATIONS
10
12
13
15
17
20
25
30
33
34
40
43
46
50
53
56
60
62
64
66
70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 195
DATE: June 29, 1973.

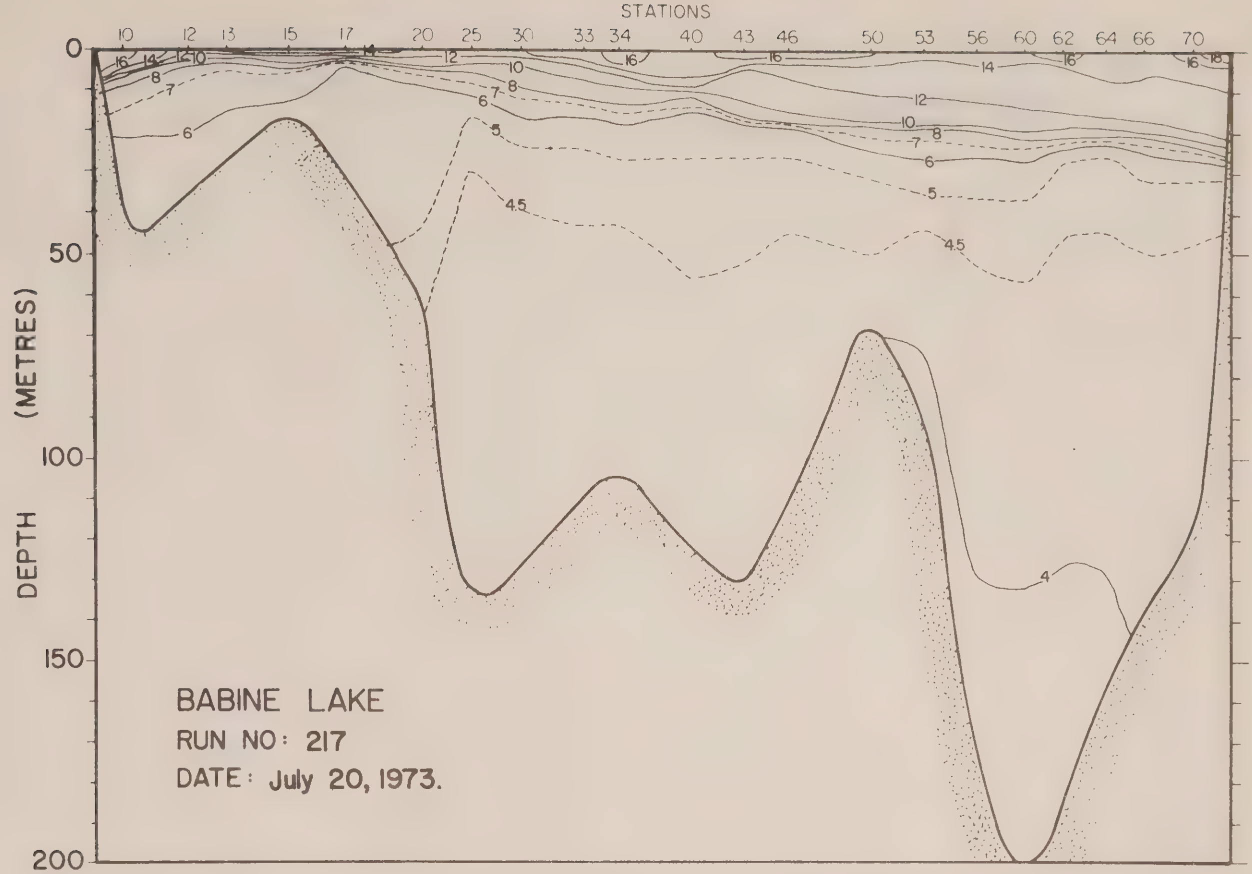

10
12
13
15
17
20
25
30
33
34
40
43
46
50
53
56
60
62
64
66
70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 201
DATE: July 3, 1973.

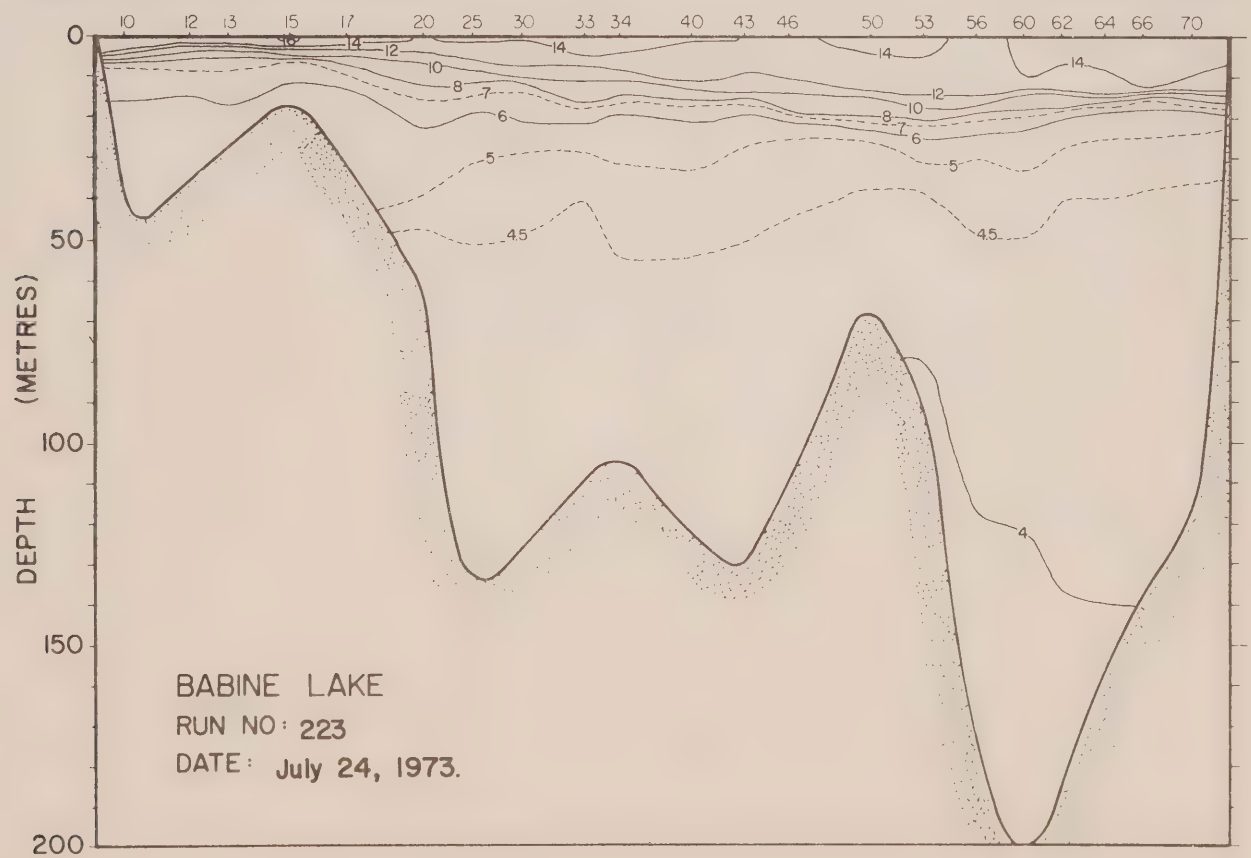

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 202
DATE: July 6, 1973.

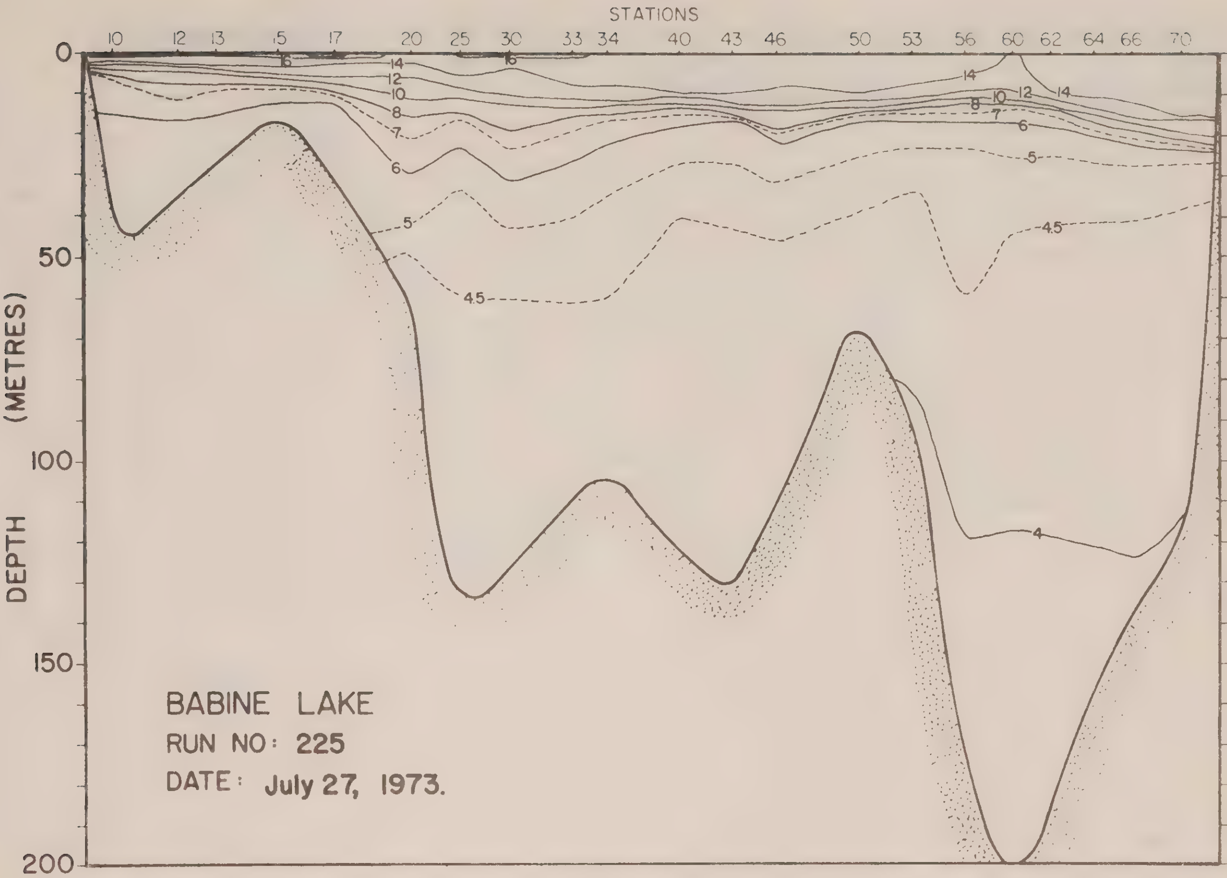

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 208
DATE: July 10, 1973.

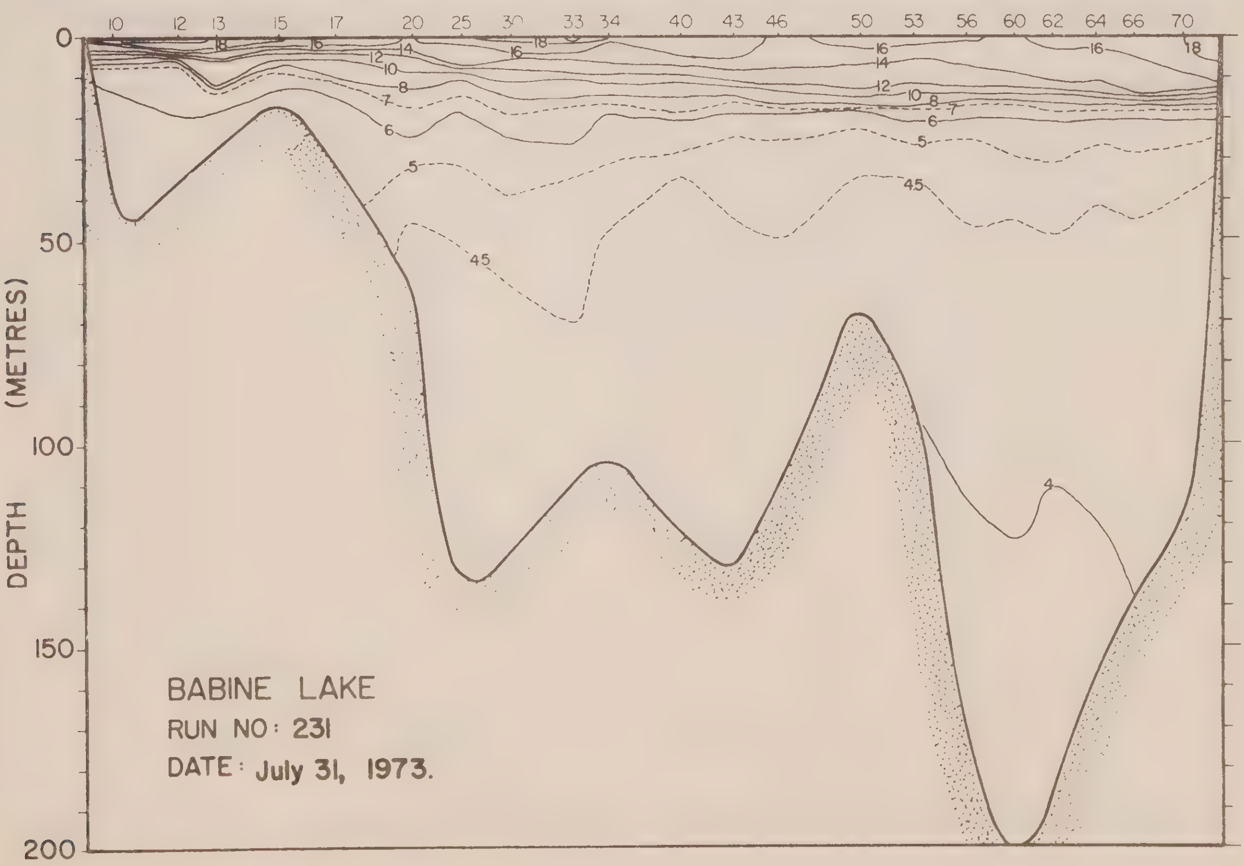

STATIONS
DEPTH (METRES)
BABINE LAKE
RUN NO: 210
DATE: July 13, 1973.

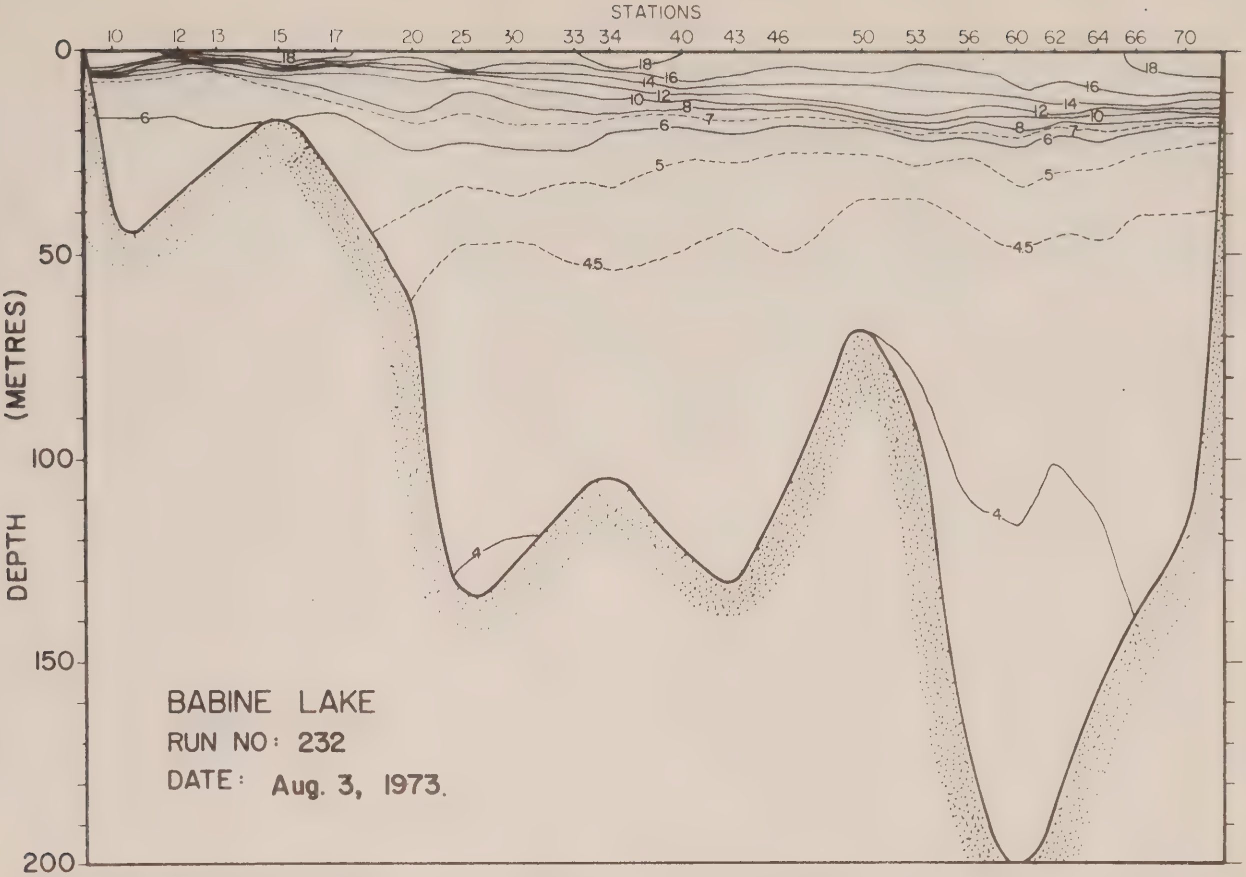

DEPTH (METRES)
BABINE LAKE
RUN NO: 216
DATE: July 17-18, 1973.

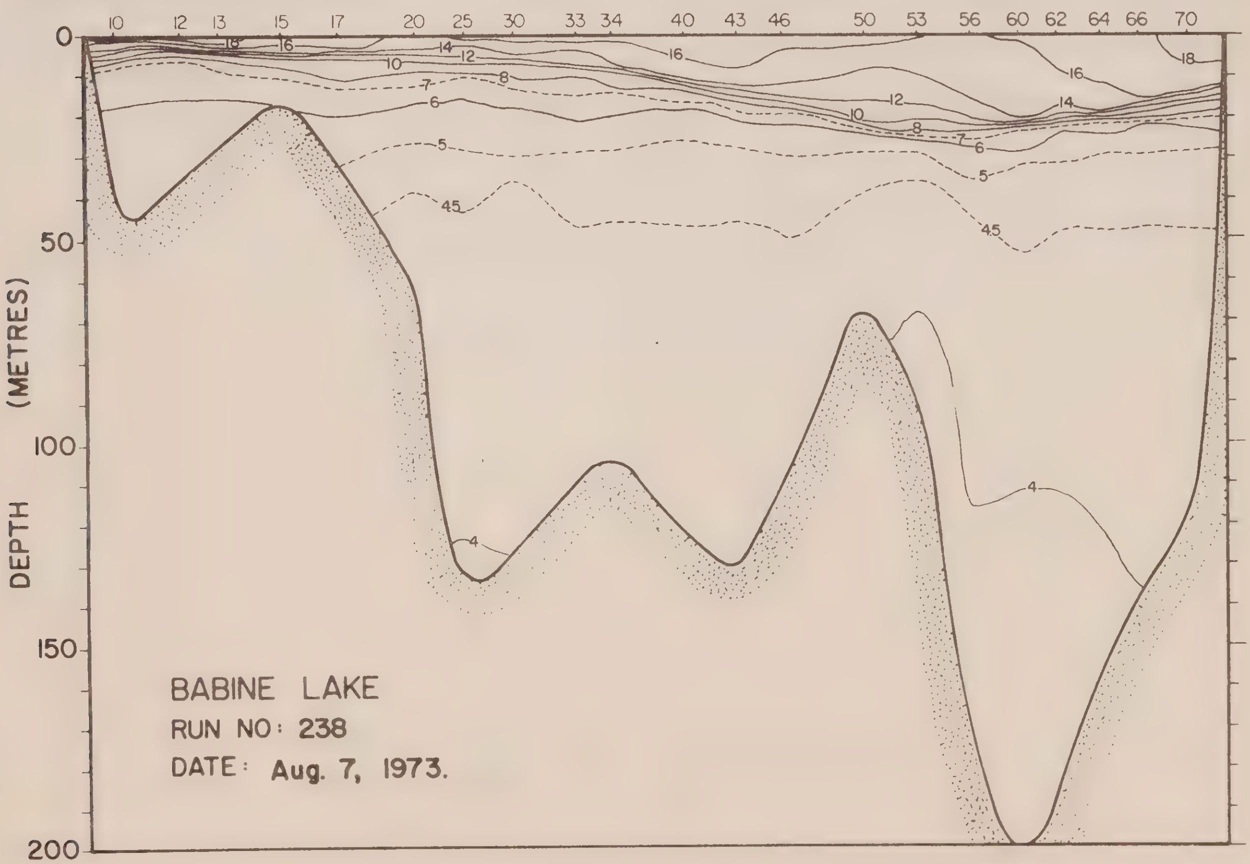

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 217
DATE: July 20, 1973.

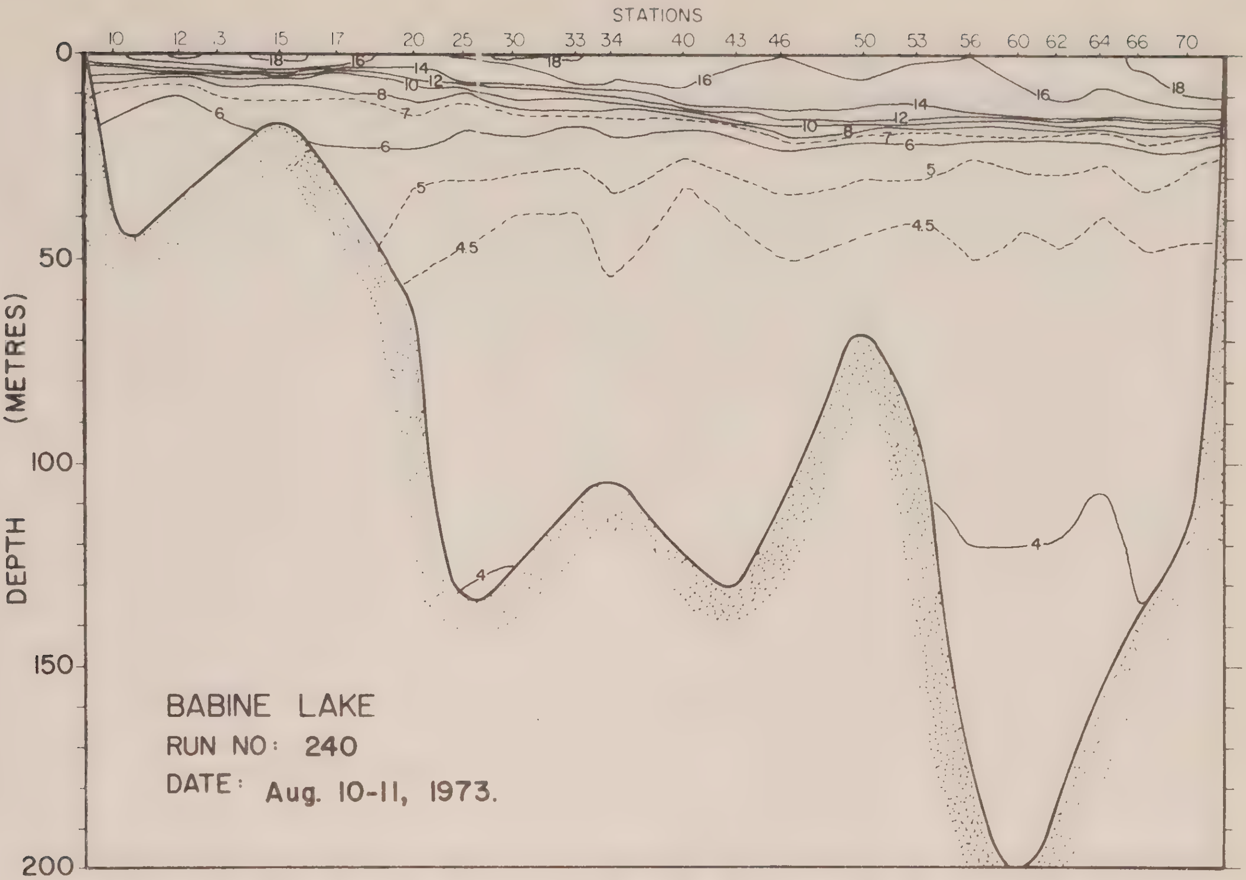

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 223
DATE: July 24, 1973.

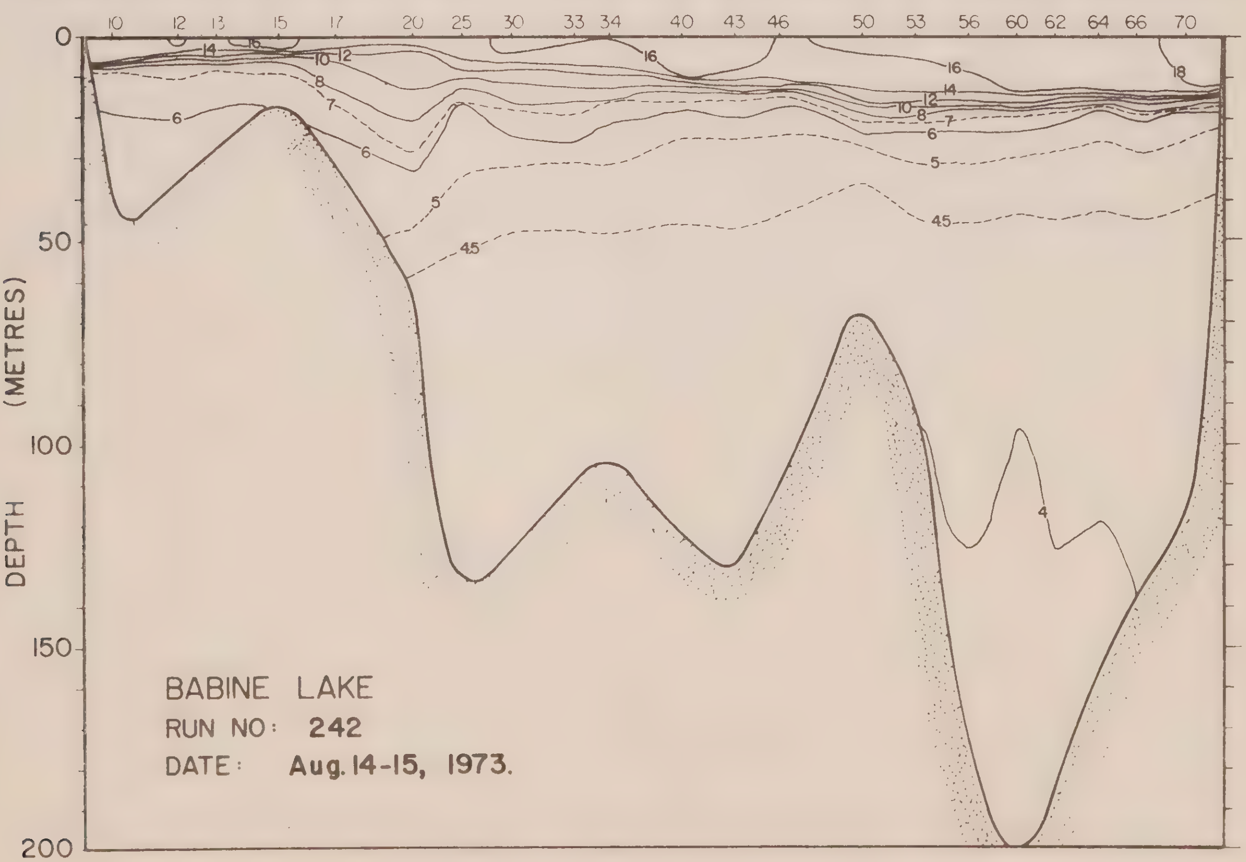

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
50
100
150
200
DEPTH (METRES)
BABINE LAKE
RUN NO: 225
DATE: July 27, 1973.

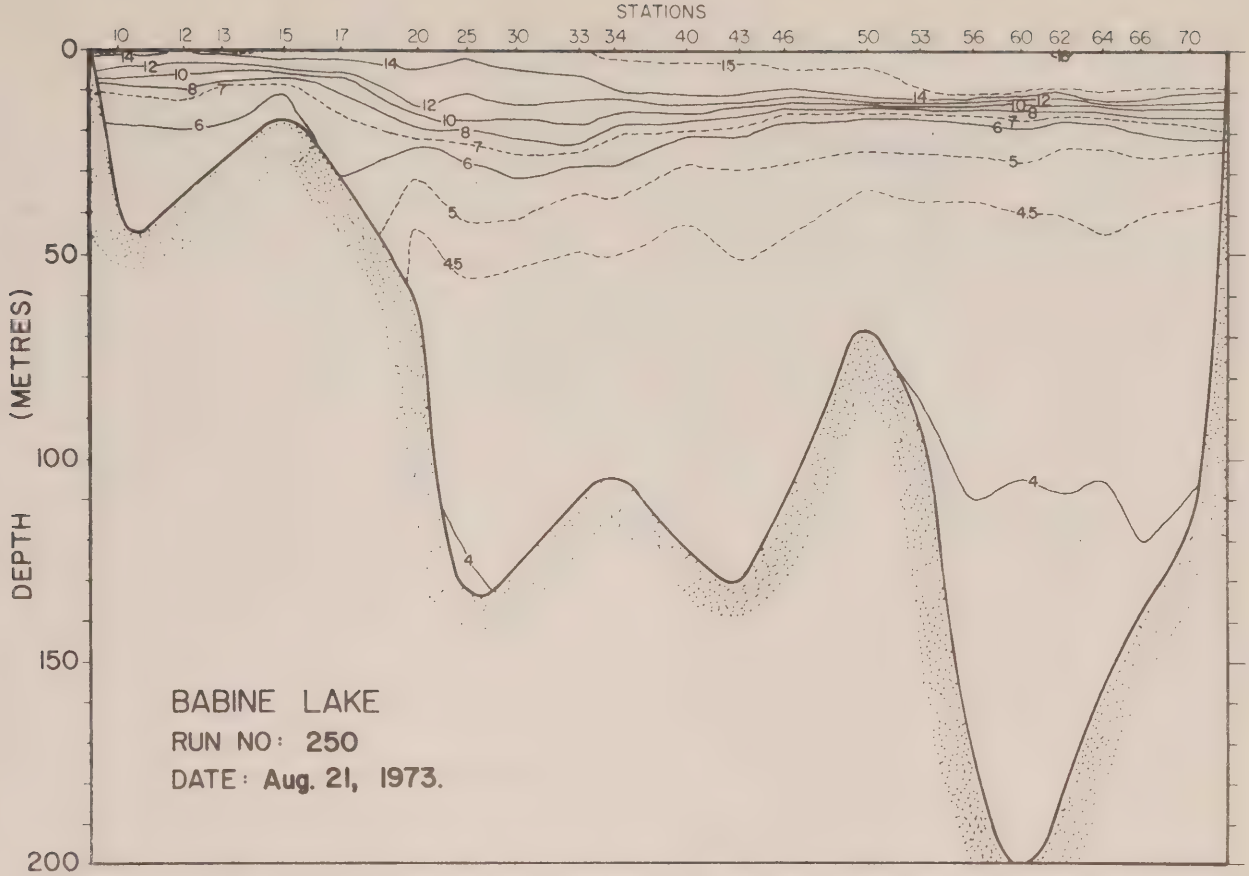

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
50
100
150
200
DEPTH (METRES)
BABINE LAKE
RUN NO: 231
DATE: July 31, 1973.

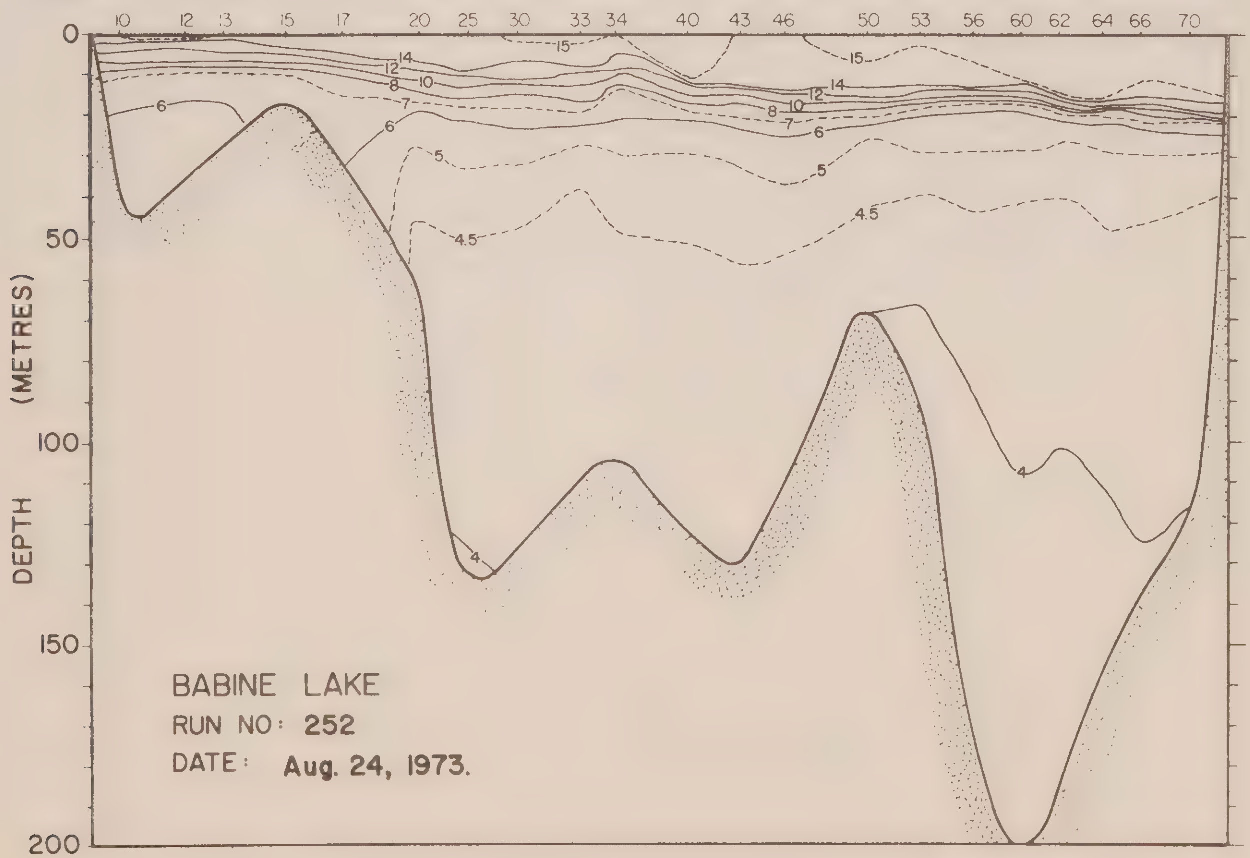

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
50
100
150
200
DEPTH (METRES)
18
16
14
12
10
8
7
6
5
4.5
4
BABINE LAKE
RUN NO: 232
DATE: Aug. 3, 1973.

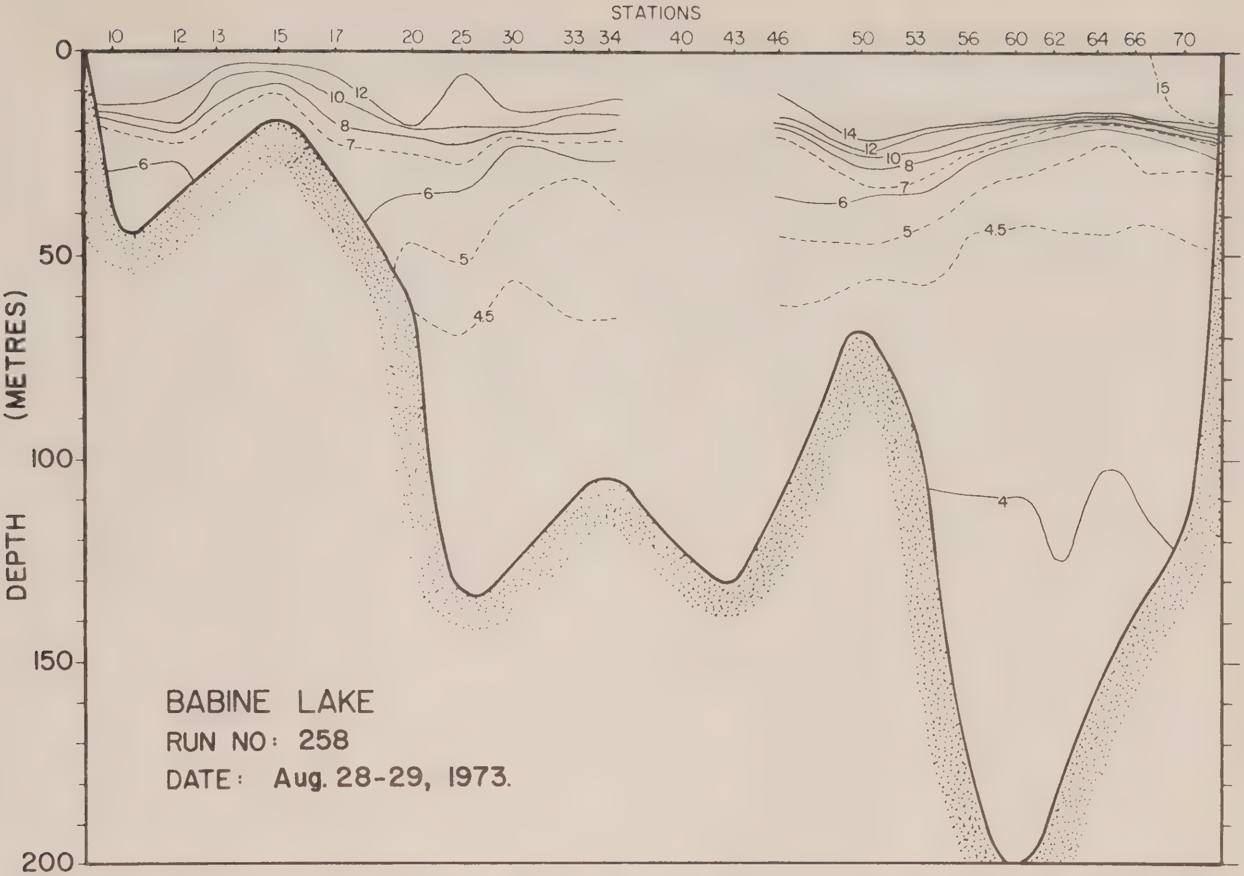

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
50
100
150
200
DEPTH (METRES)
18
16
14
12
10
8
7
6
5
4.5
4
BABINE LAKE
RUN NO: 238
DATE: Aug. 7, 1973.

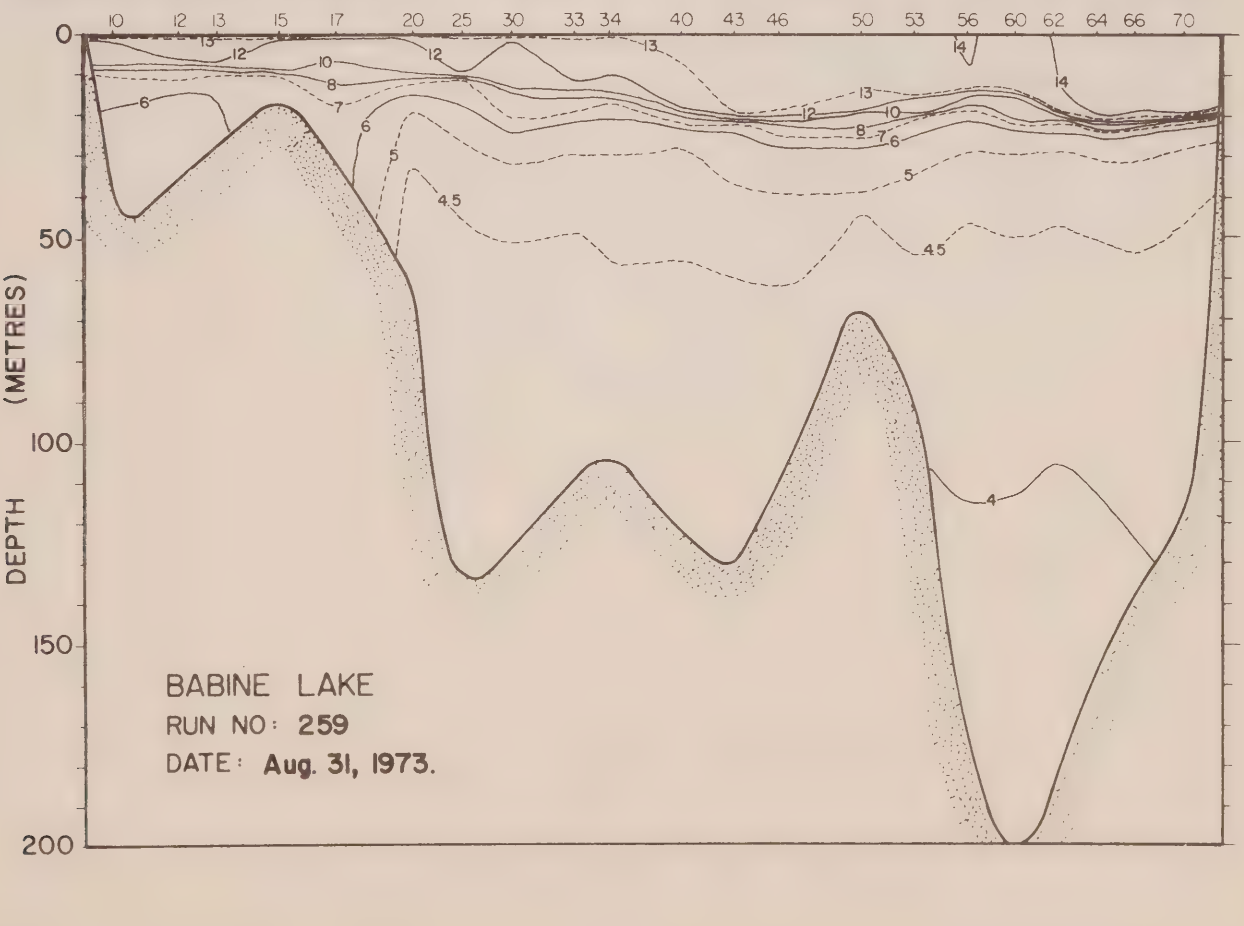

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 240
DATE: Aug. 10-11, 1973.

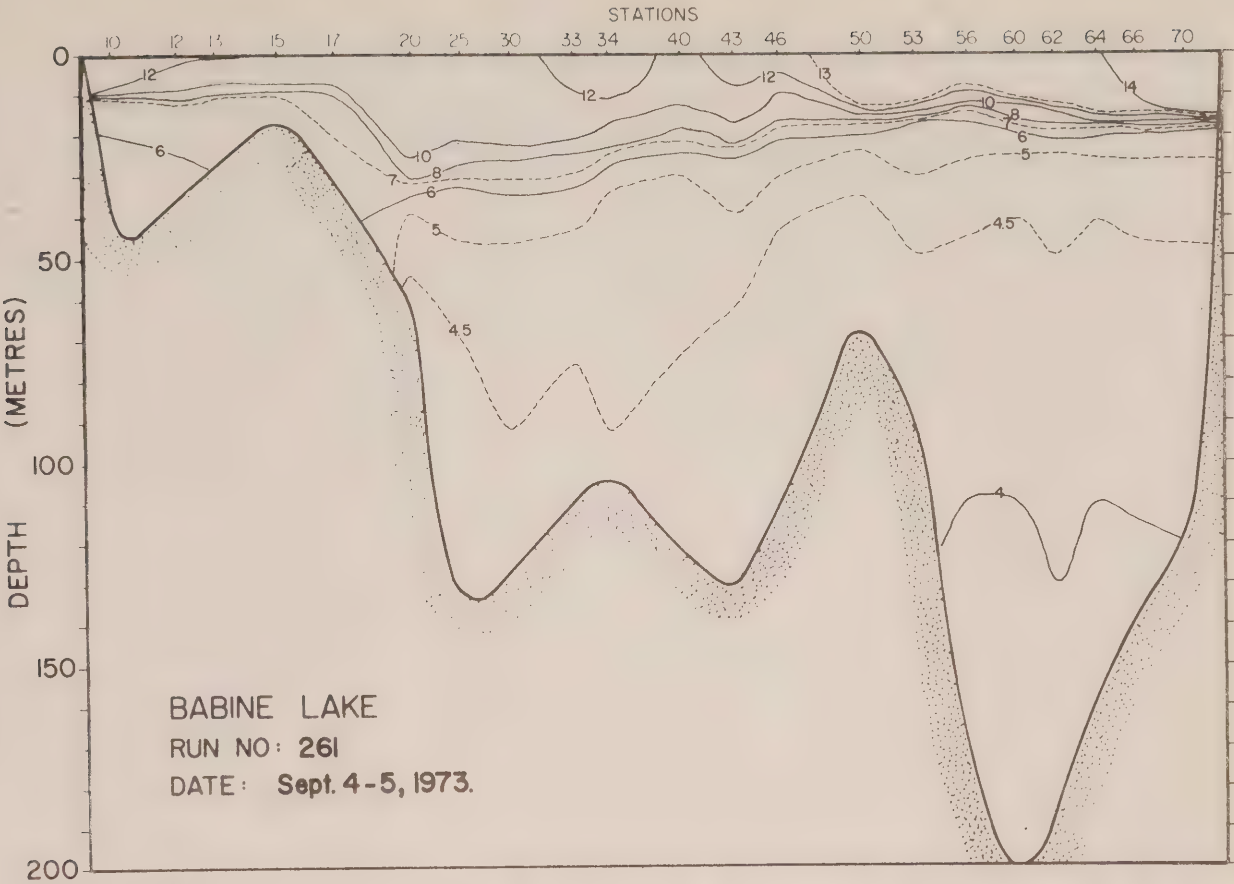

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 242
DATE: Aug. 14-15, 1973.

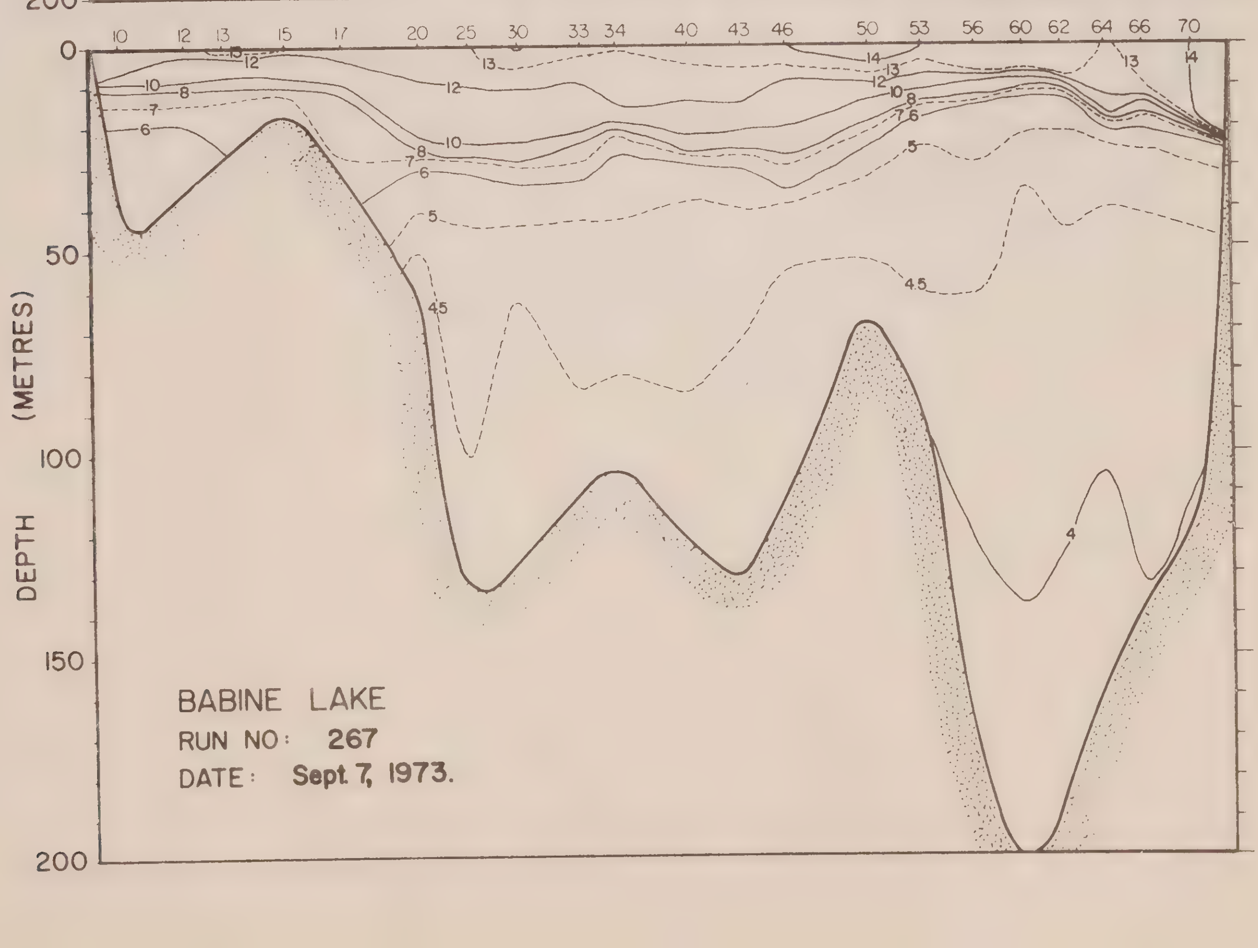

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 250
DATE: Aug. 21, 1973.

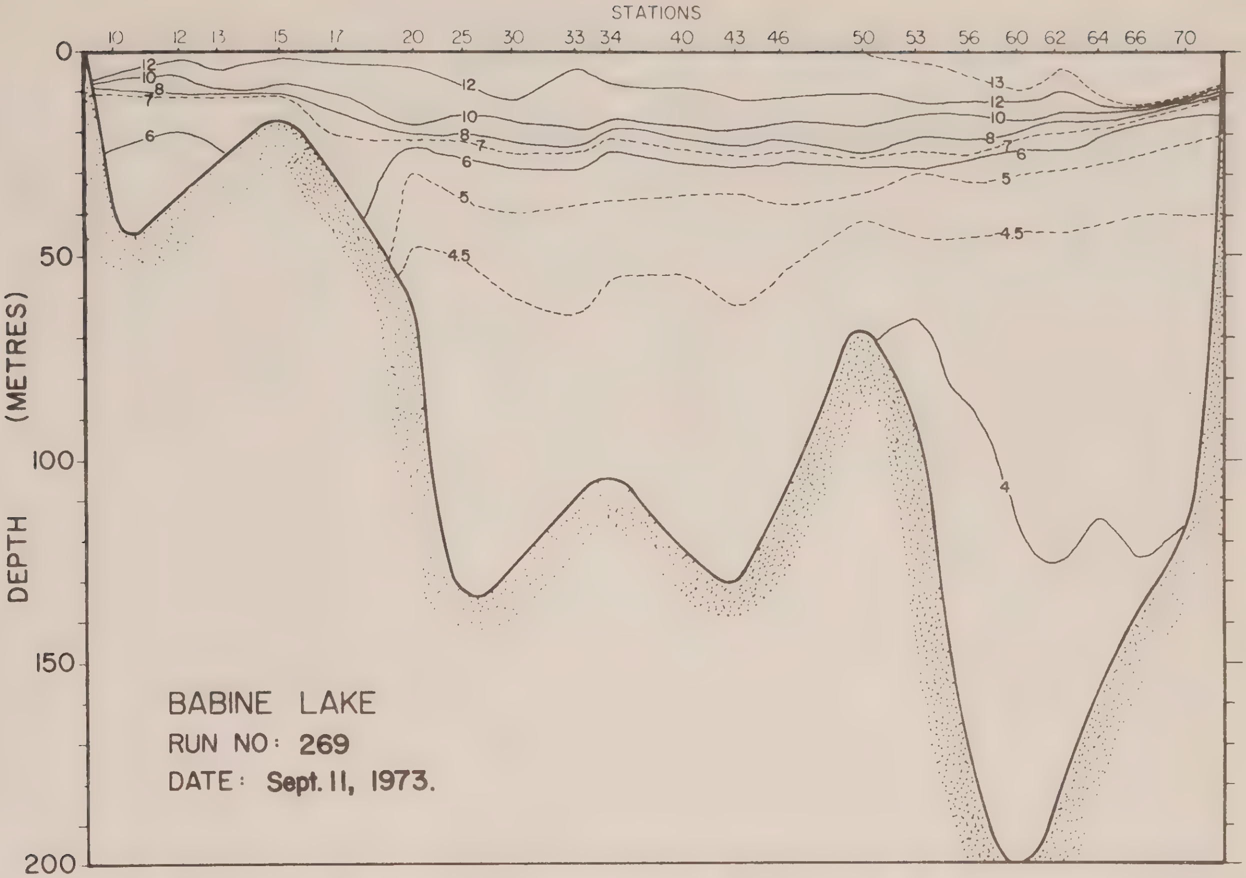

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 252
DATE: Aug. 24, 1973.

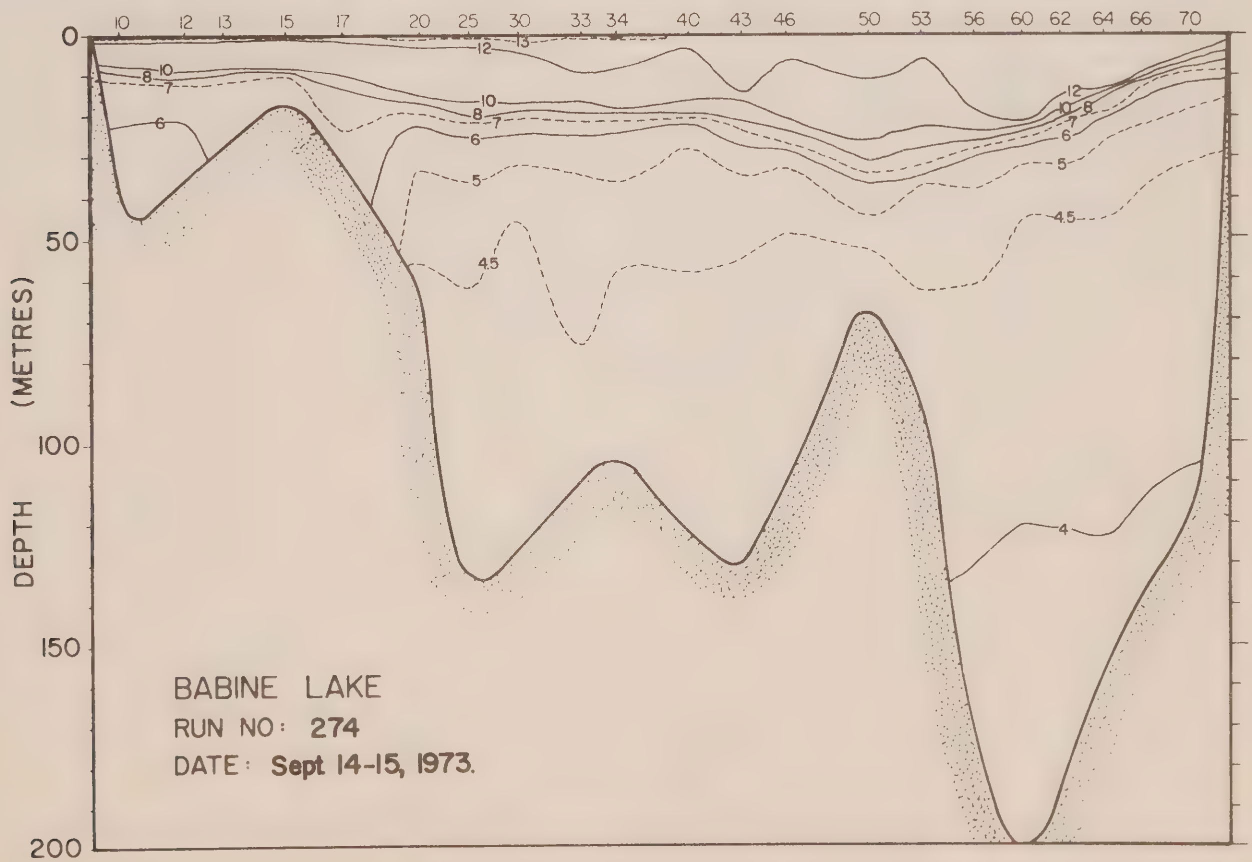

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 258
DATE: Aug. 28-29, 1973.

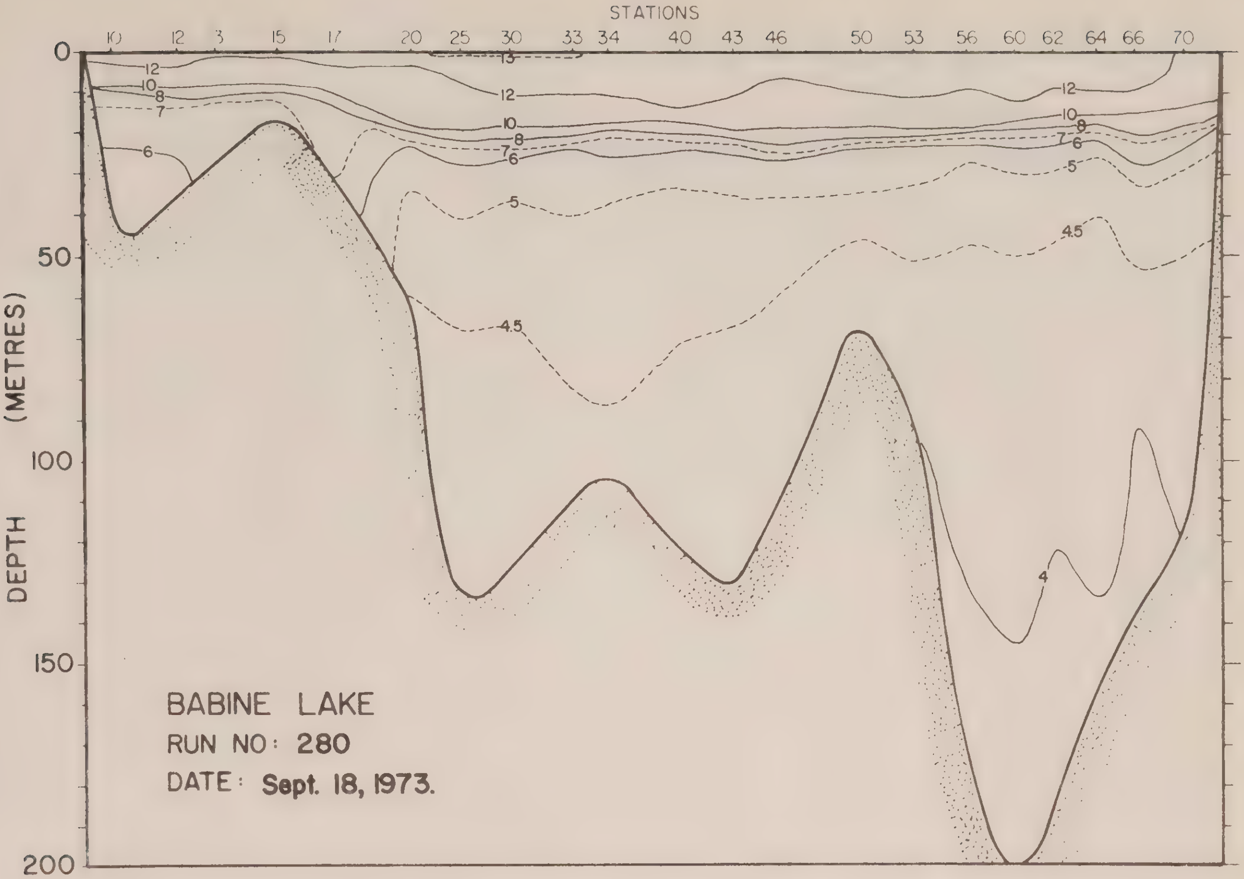

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 259
DATE: Aug. 31, 1973.

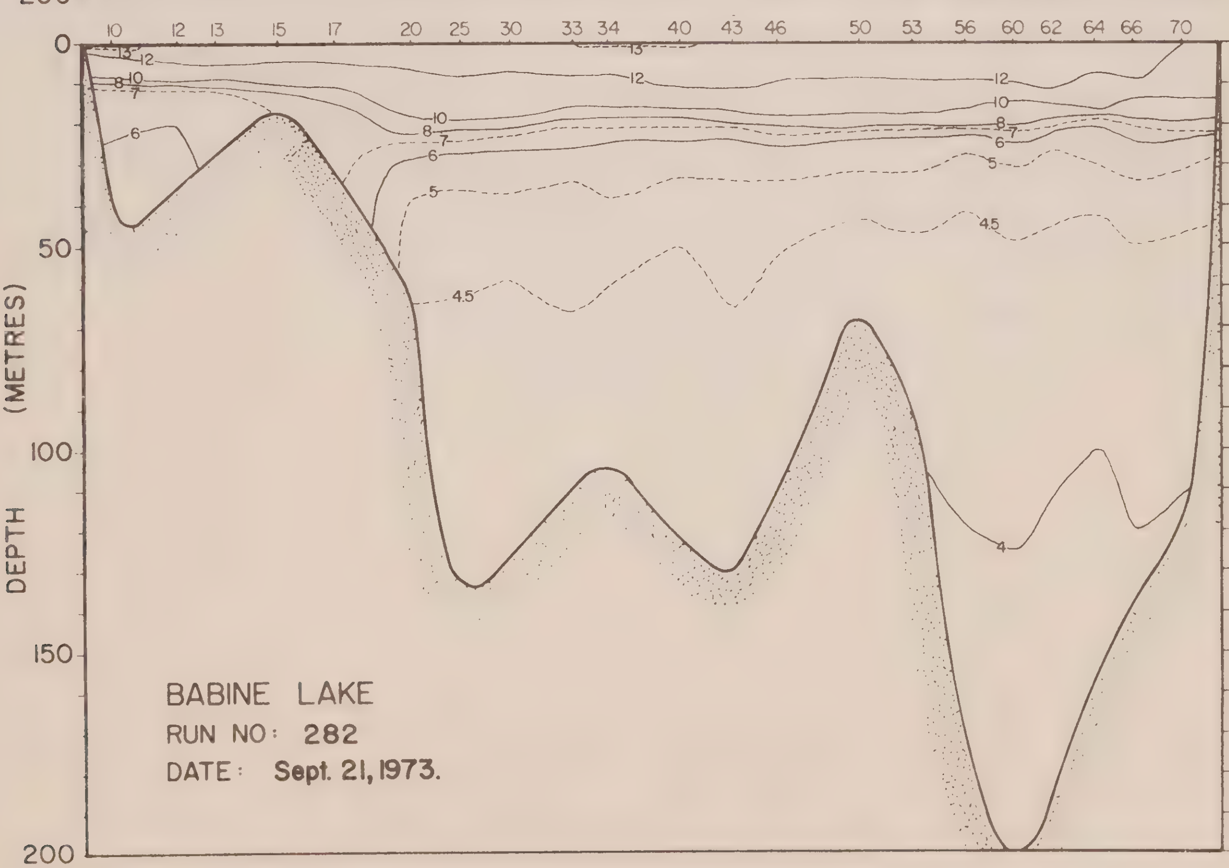

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
12
13
14
10
8
7
6
5
4.5
4
BABINE LAKE
RUN NO: 261
DATE: Sept. 4-5, 1973.

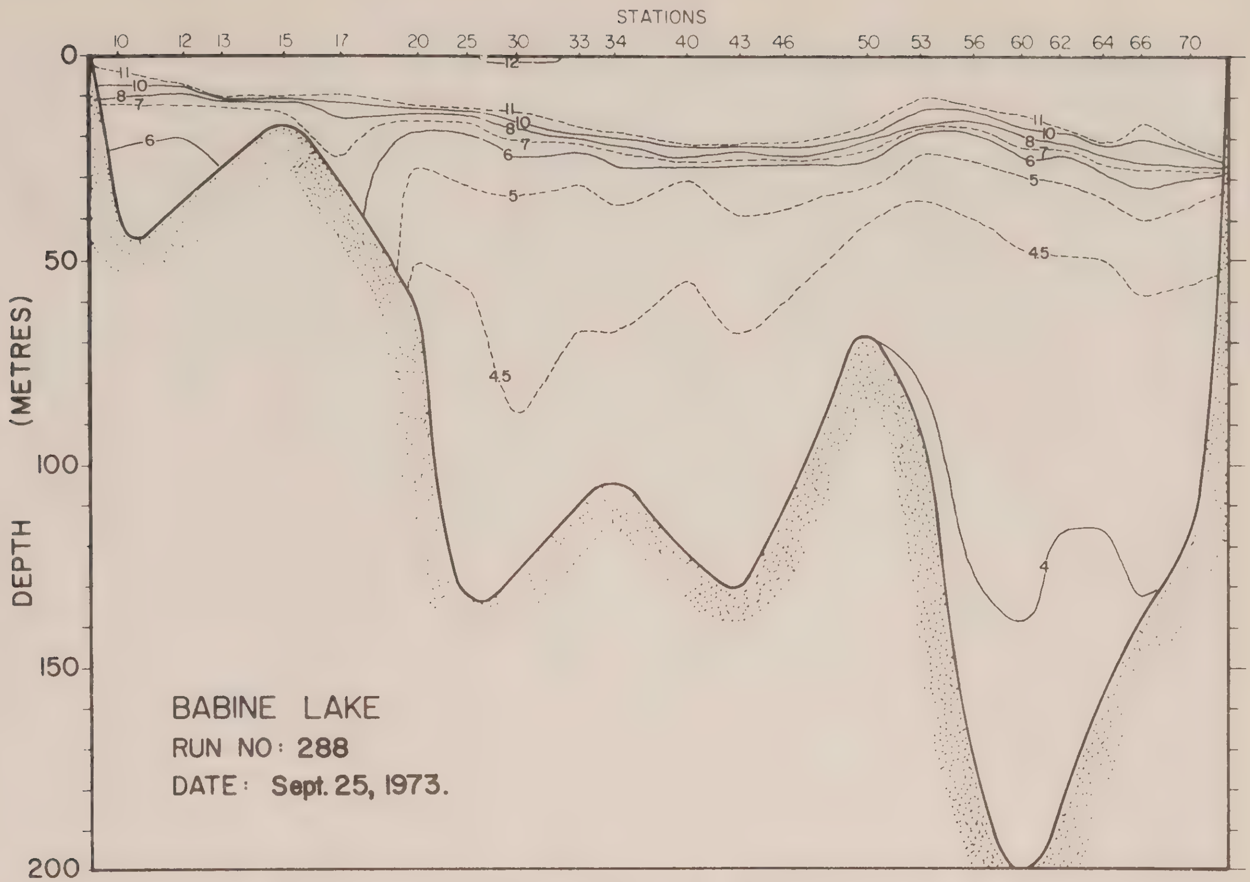

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
12
13
14
10
8
7
6
5
4.5
4
BABINE LAKE
RUN NO: 267
DATE: Sept. 7, 1973.

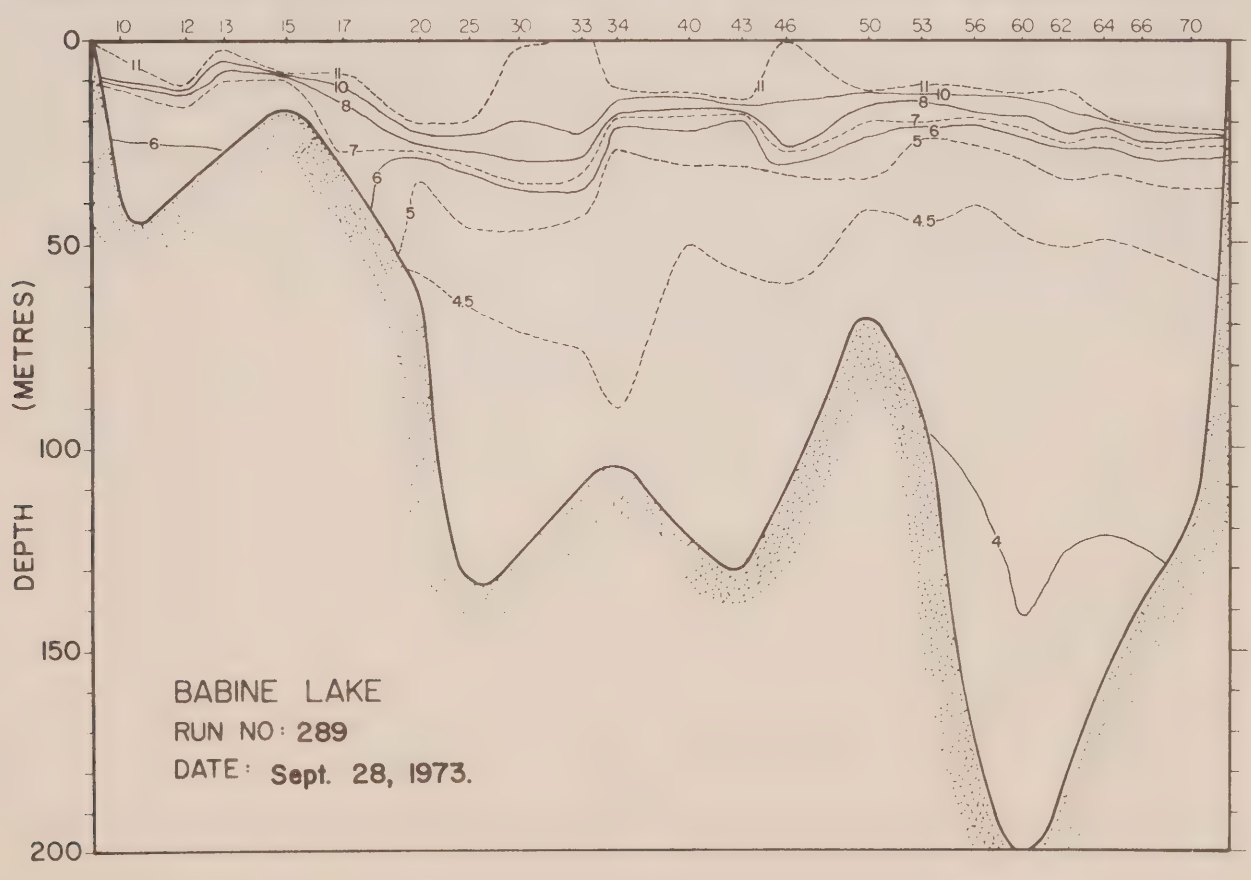

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
50
100
150
200
DEPTH (METRES)
13
12
10
8
7
6
5
4.5
4
BABINE LAKE
RUN NO: 269
DATE: Sept. 11, 1973.

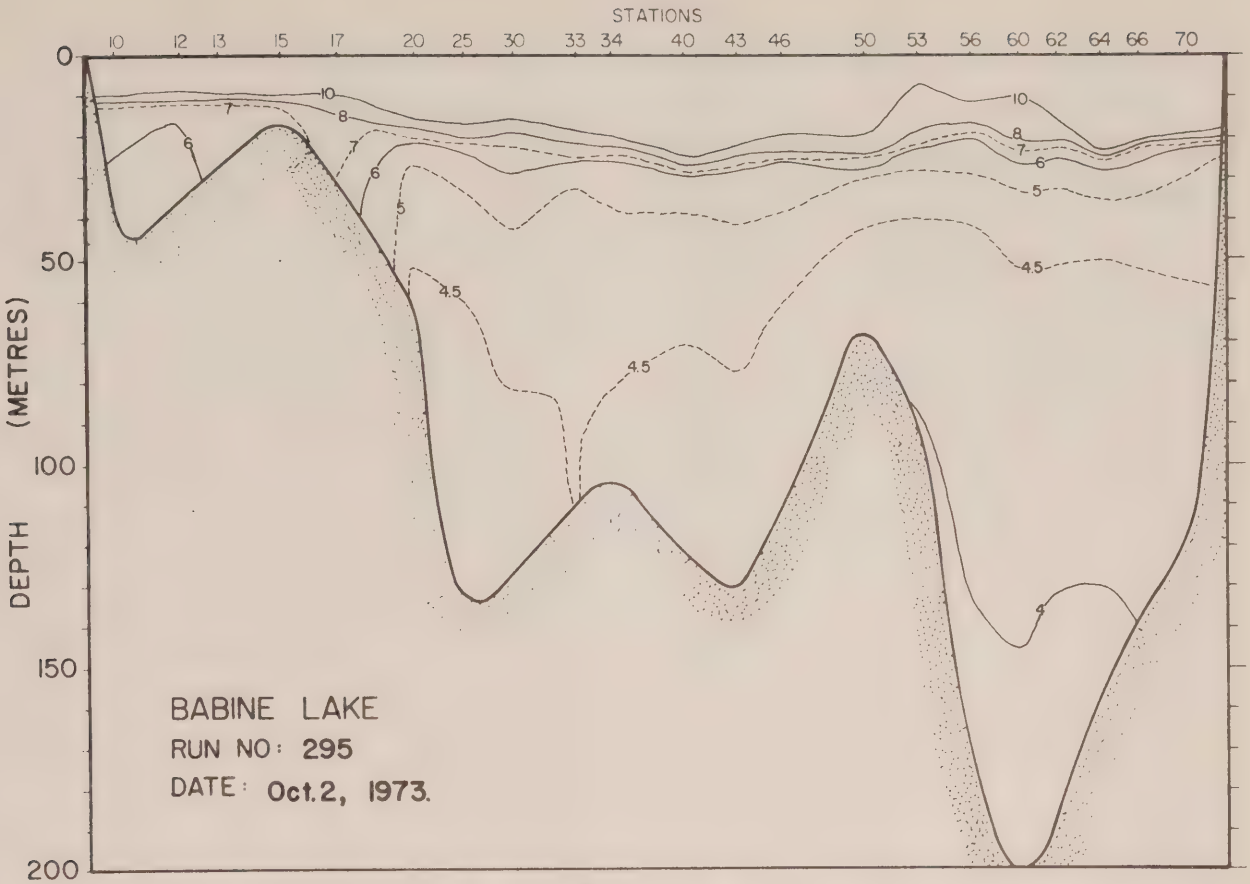

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
50
100
150
200
DEPTH (METRES)
13
12
10
8
7
6
5
4.5
4
BABINE LAKE
RUN NO: 274
DATE: Sept 14-15, 1973.

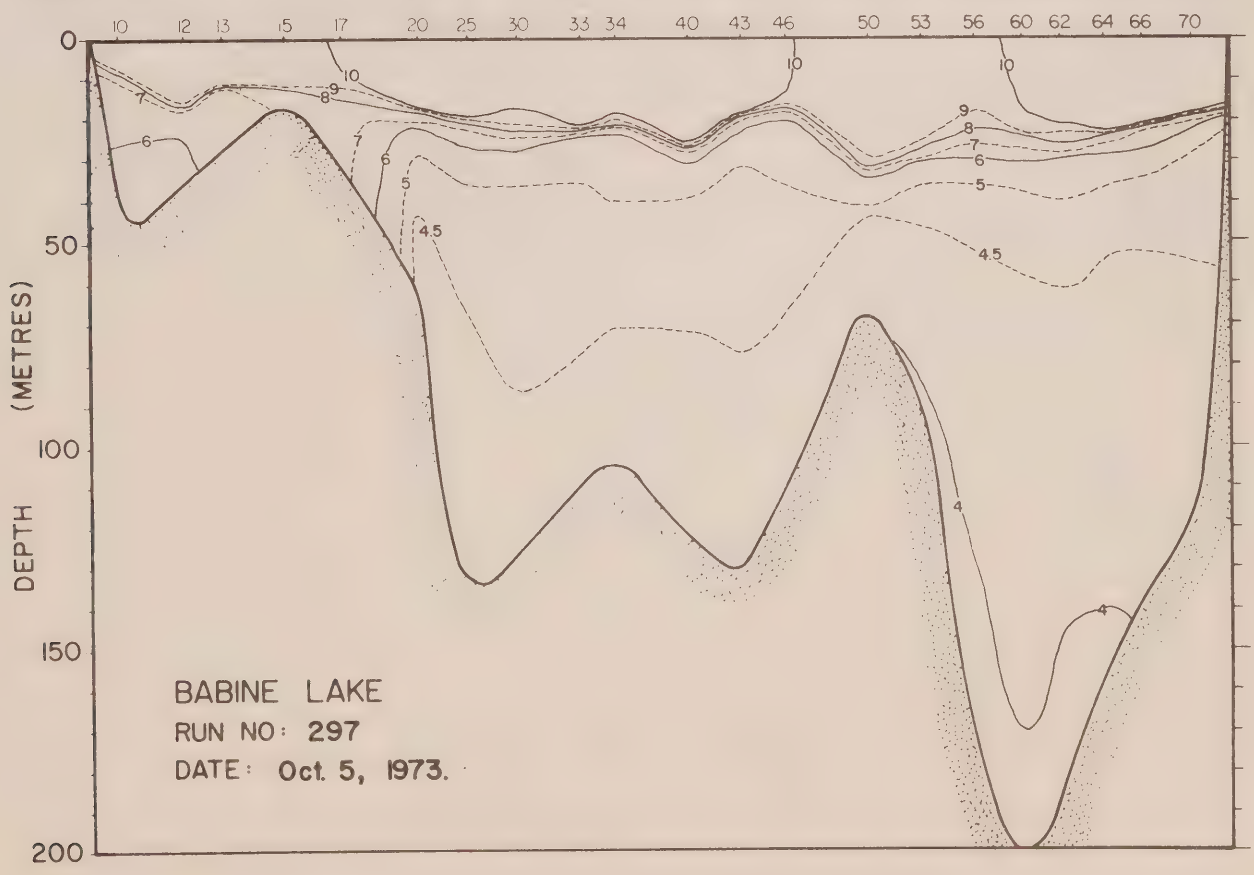

STATIONS
10
12
3
15
17
20
25
30
33
34
40
43
46
50
53
56
60
62
64
66
70
0
50
100
150
200
DEPTH (METRES)
13
12
10
8
7
6
5
4.5
4
BABINE LAKE
RUN NO: 280
DATE: Sept. 18, 1973.

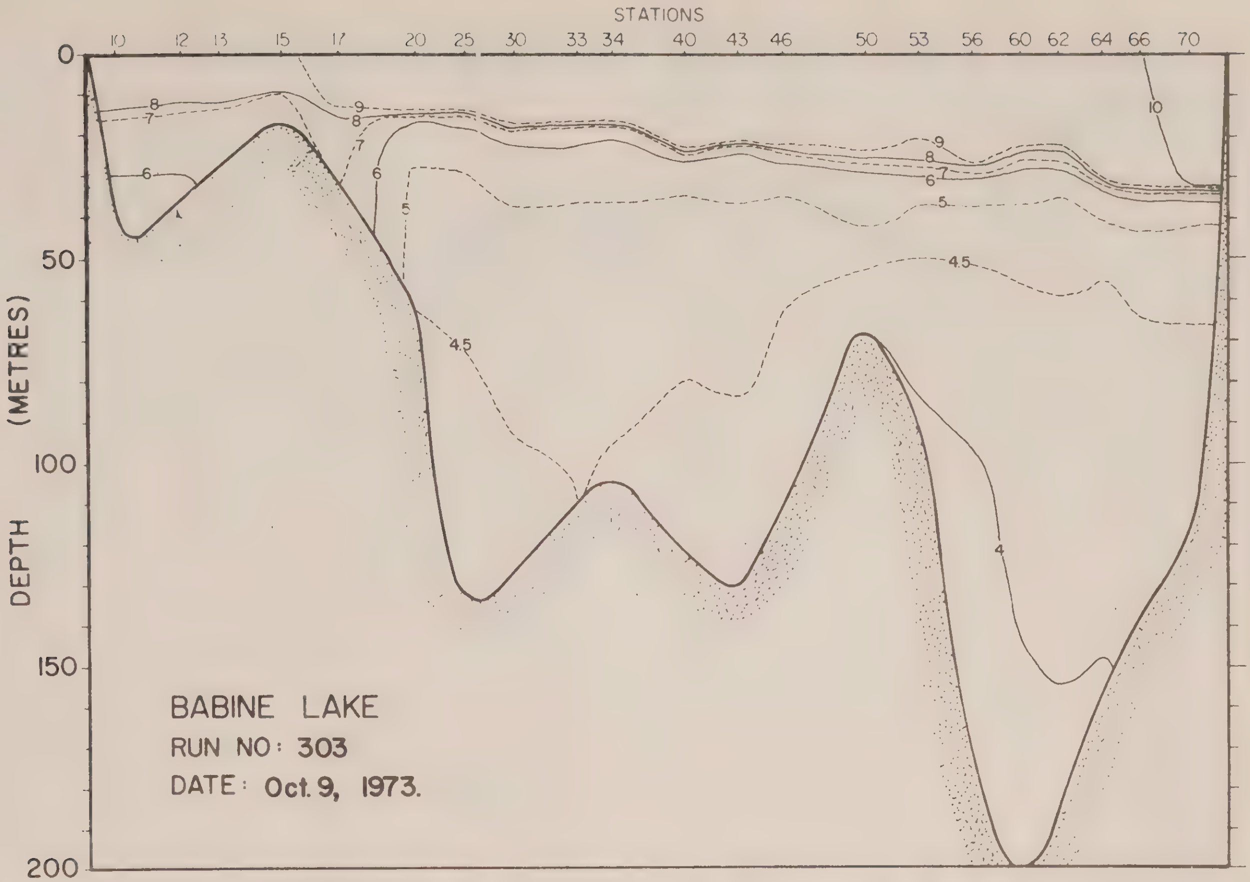

10
12
13
15
17
20
25
30
33
34
40
43
46
50
53
56
60
62
64
66
70
0
50
100
150
200
DEPTH (METRES)
13
12
10
8
7
6
5
4.5
4
BABINE LAKE
RUN NO: 282
DATE: Sept. 21, 1973.

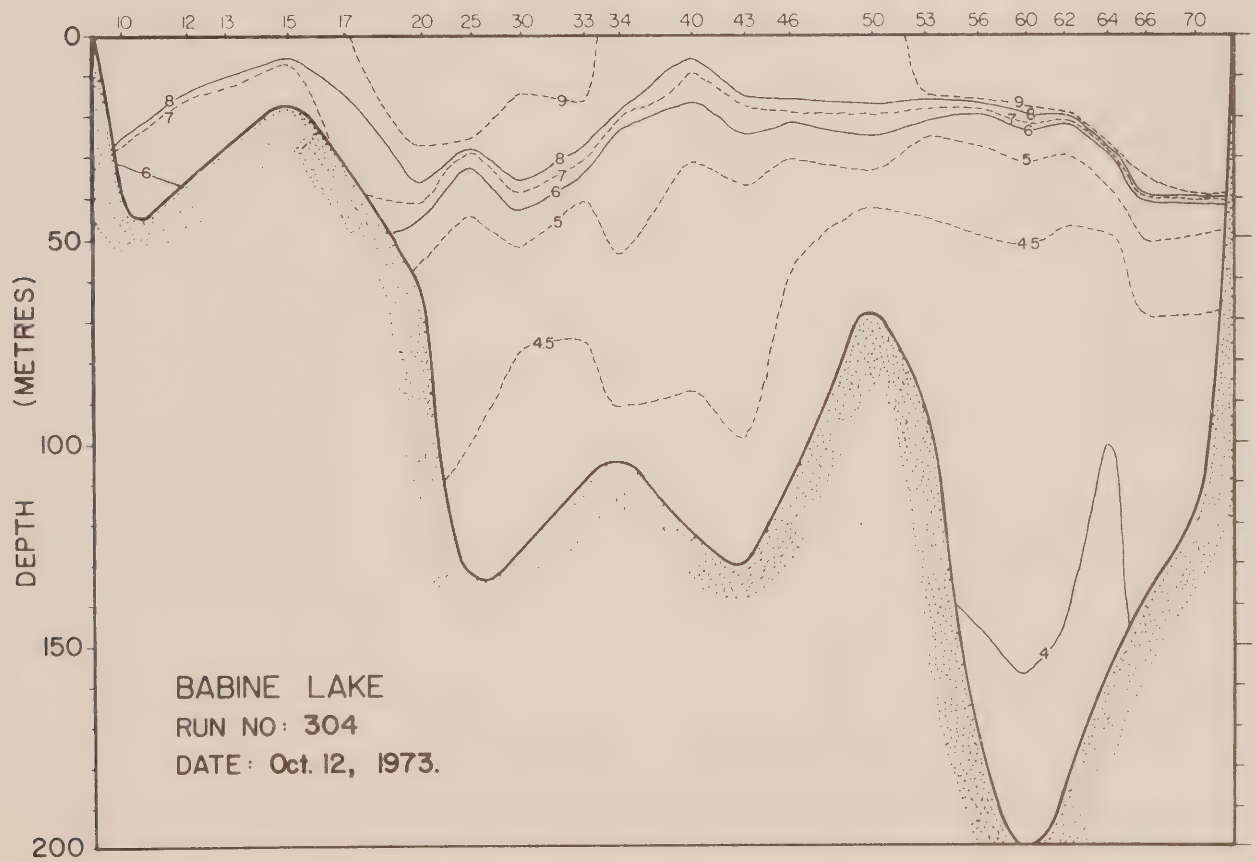

STATIONS
DEPTH (METRES)
BABINE LAKE
RUN NO: 288
DATE: Sept. 25, 1973.

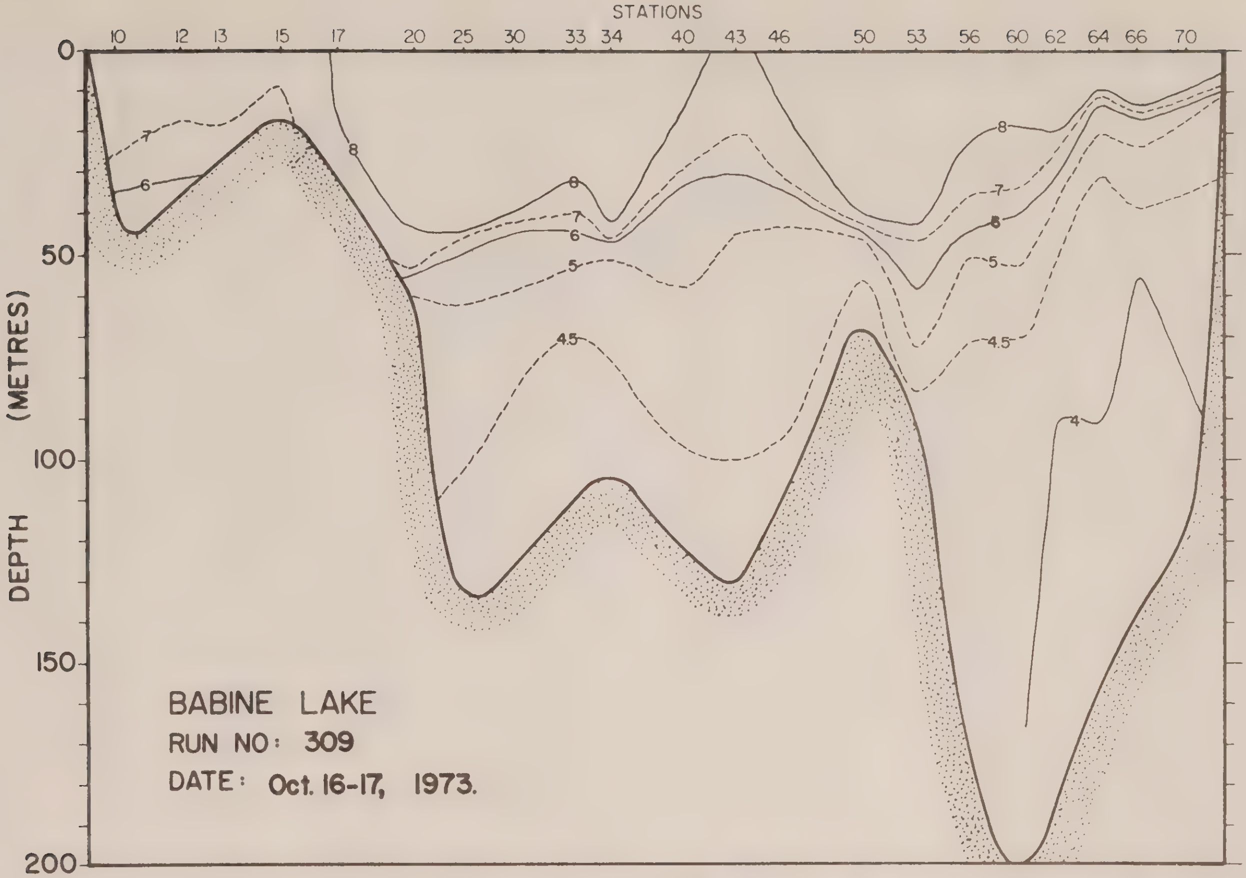

DEPTH (METRES)
BABINE LAKE
RUN NO: 289
DATE: Sept. 28, 1973.

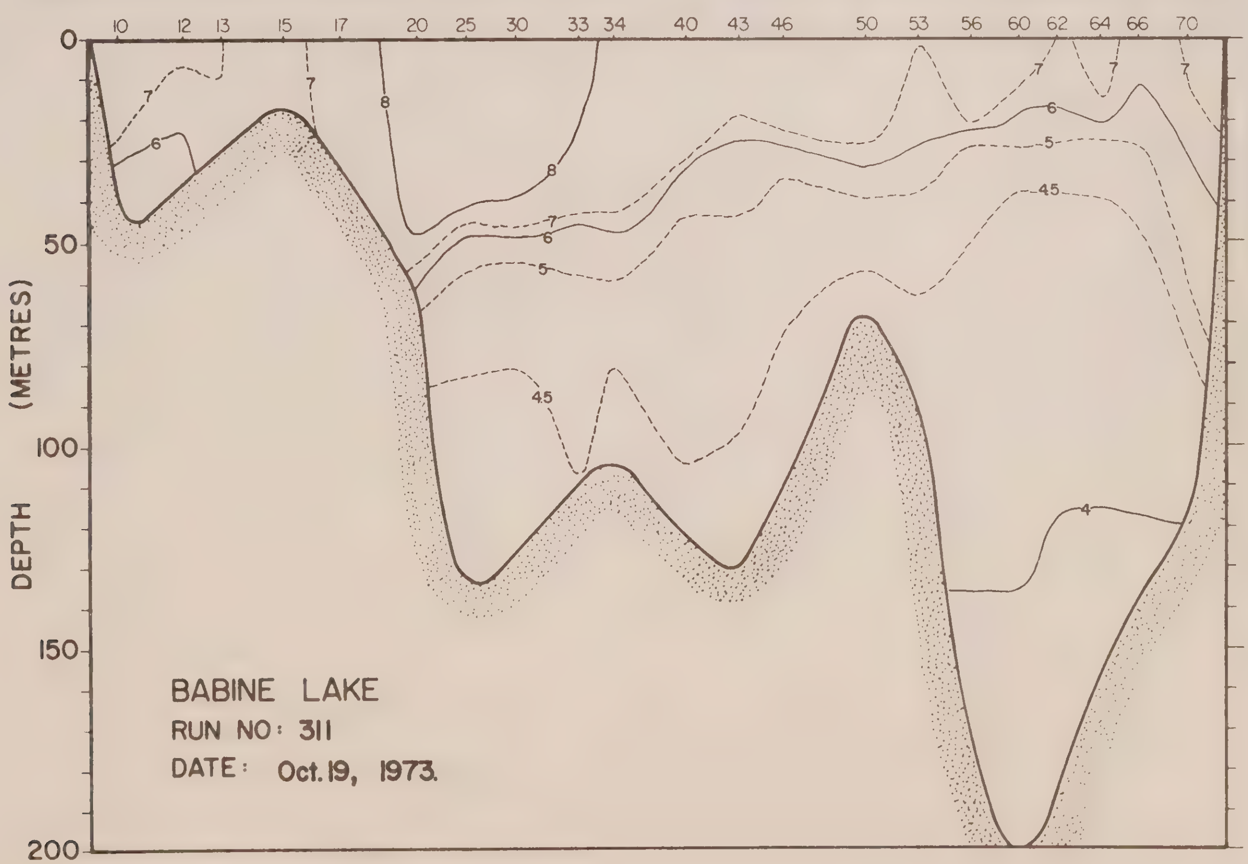

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
10
8
7
6
5
4.5
4
BABINE LAKE
RUN NO: 295
DATE: Oct. 2, 1973.

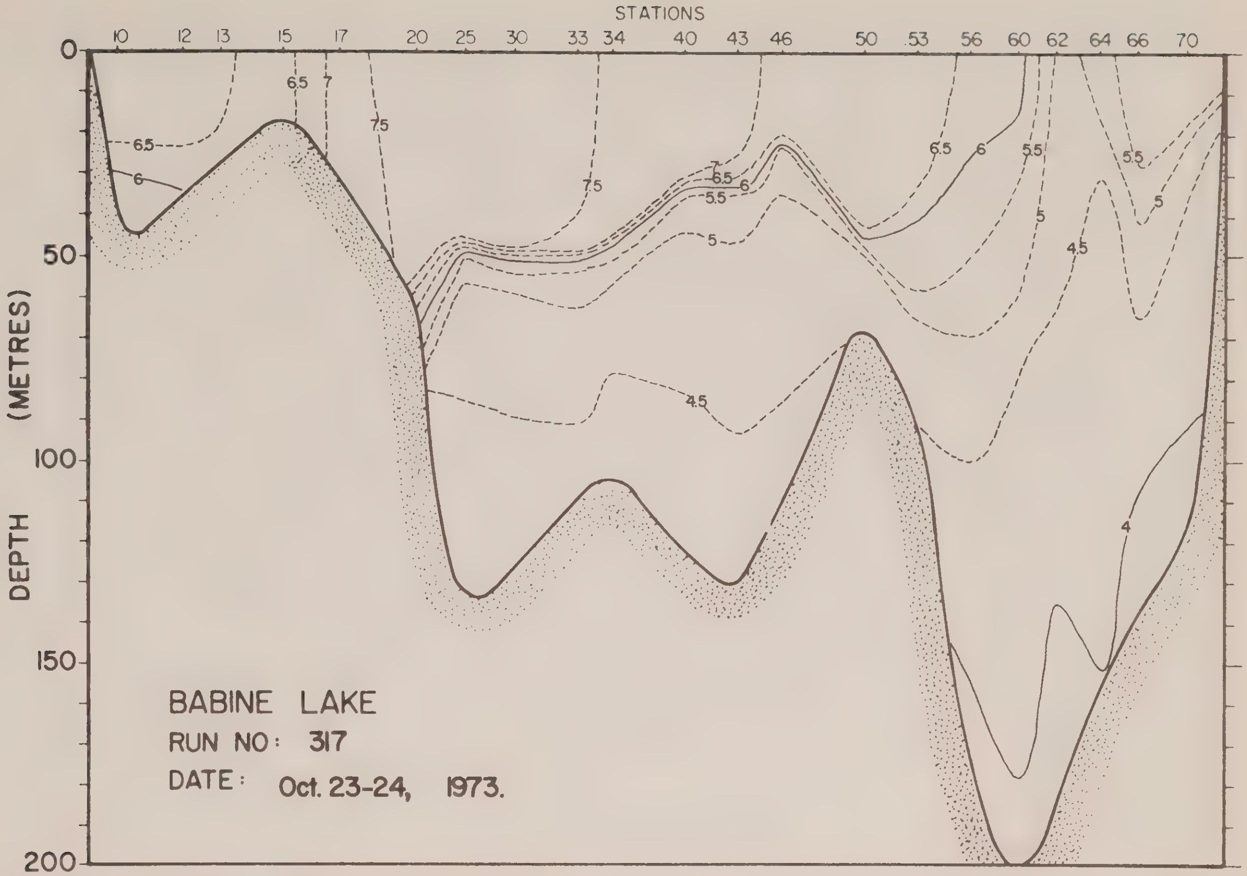

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
10
9
8
7
6
5
4.5
4
BABINE LAKE
RUN NO: 297
DATE: Oct. 5, 1973.

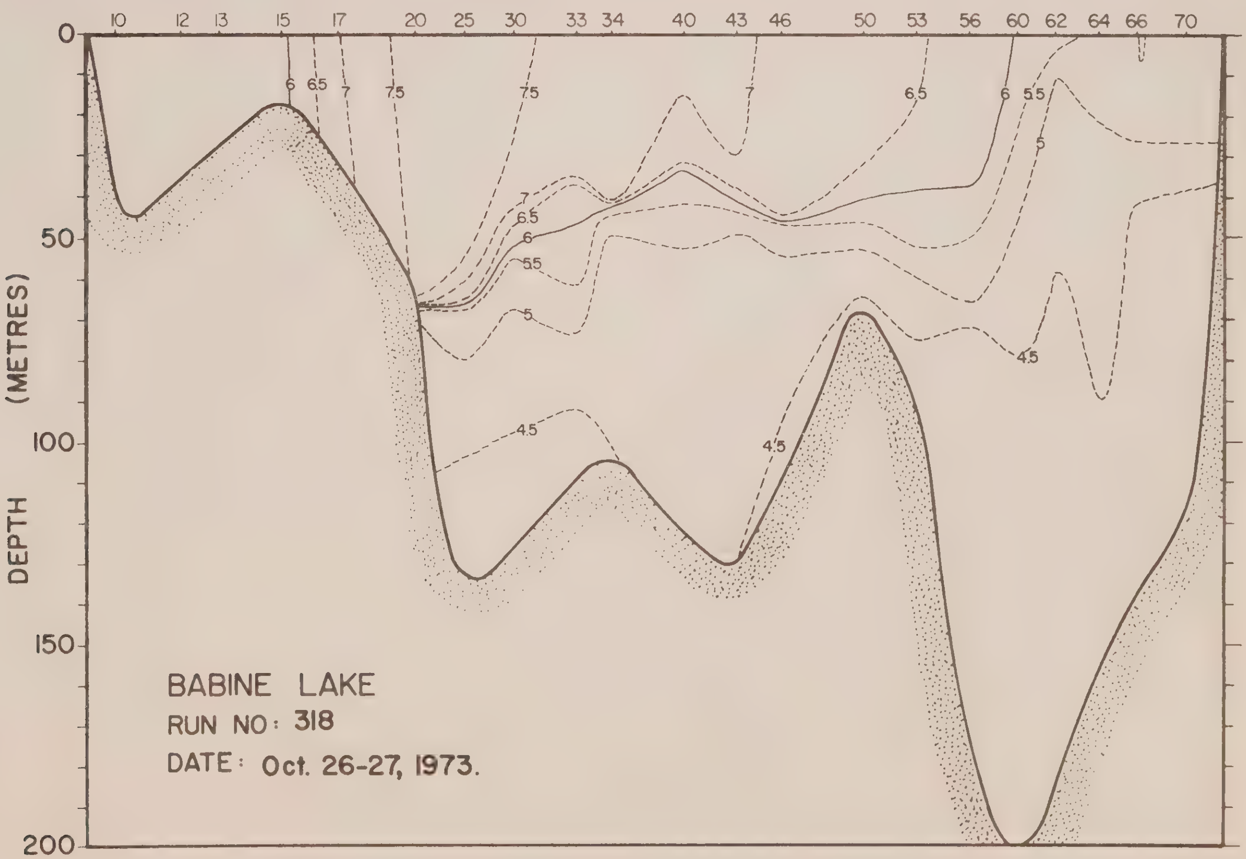

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0 50 100 150 200
BABINE LAKE
RUN NO: 303
DATE: Oct. 9, 1973.

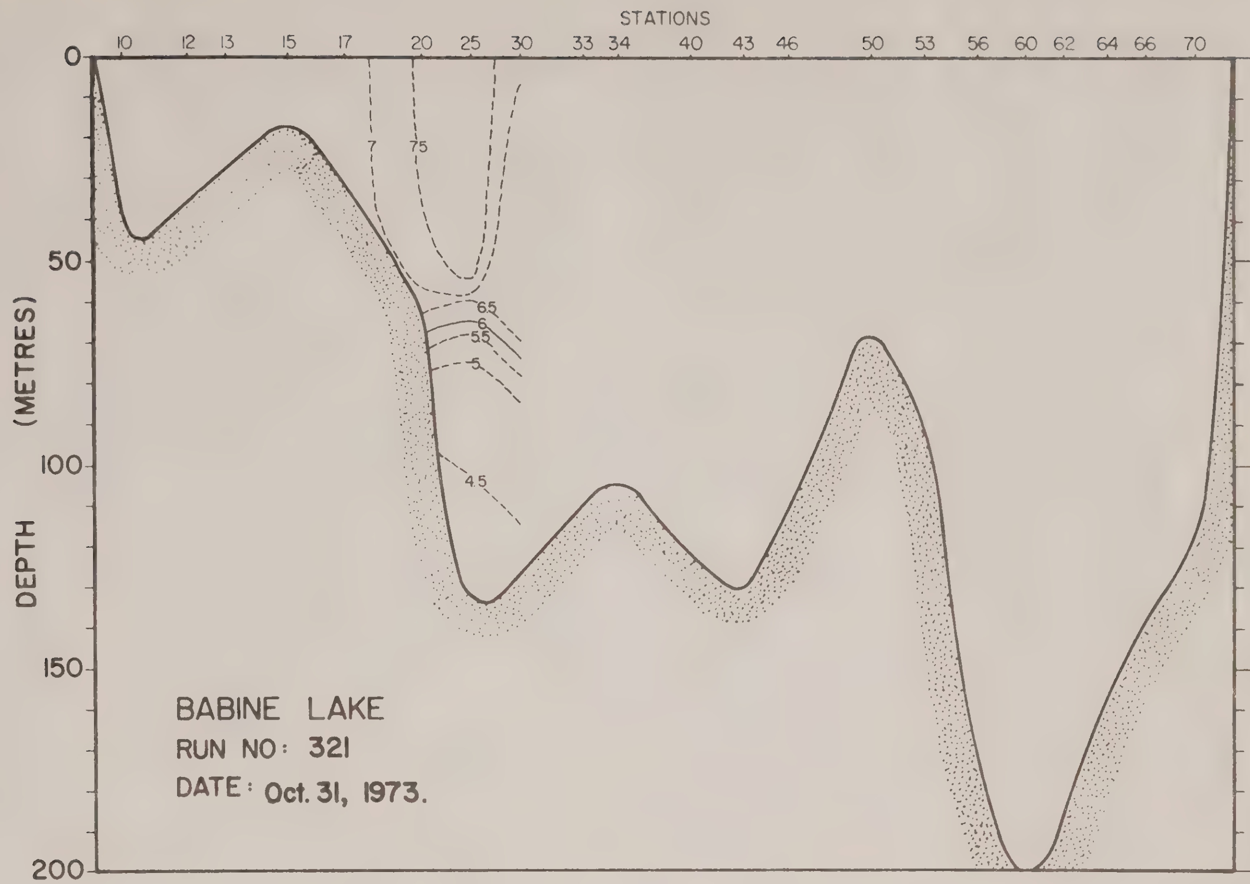

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0 50 100 150 200
BABINE LAKE
RUN NO: 304
DATE: Oct. 12, 1973.


STATIONS
10
12
13
15
17
20
25
30
33
34
40
43
46
50
53
56
60
62
64
66
70
0
50
100
150
200
DEPTH (METRES)
8
7
6
5
4.5
4
BABINE LAKE
RUN NO: 309
DATE: Oct. 16-17, 1973.

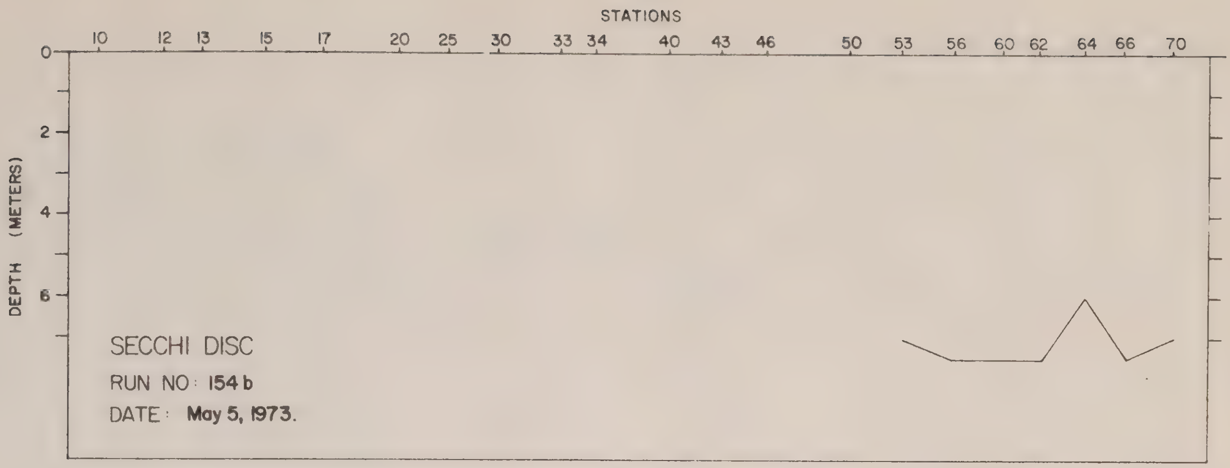

10
12
13
15
17
20
25
30
33
34
40
43
46
50
53
56
60
62
64
66
70
0
50
100
150
200
DEPTH (METRES)
8
7
6
5
4.5
4
BABINE LAKE
RUN NO: 311
DATE: Oct. 19, 1973.

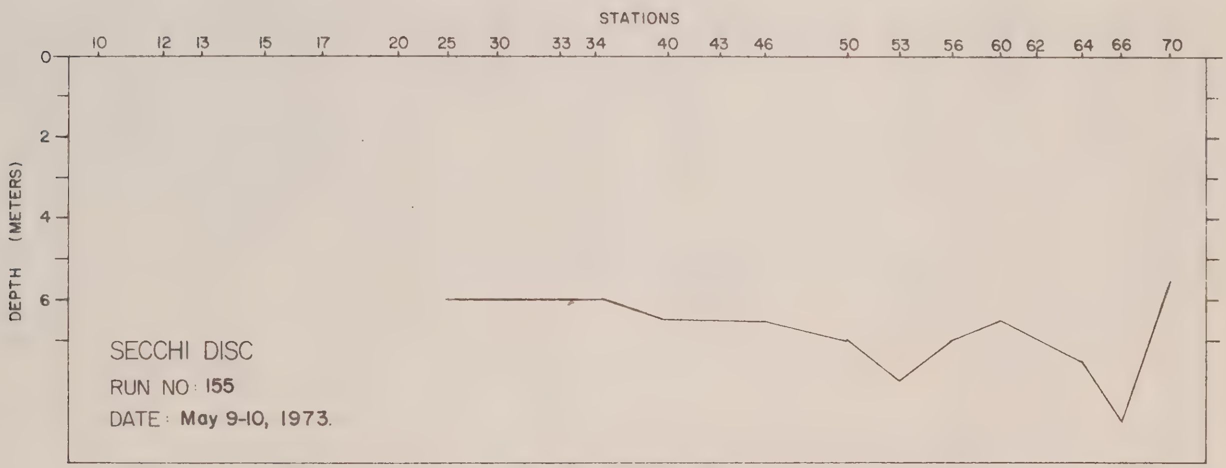

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 317
DATE: Oct. 23-24, 1973.

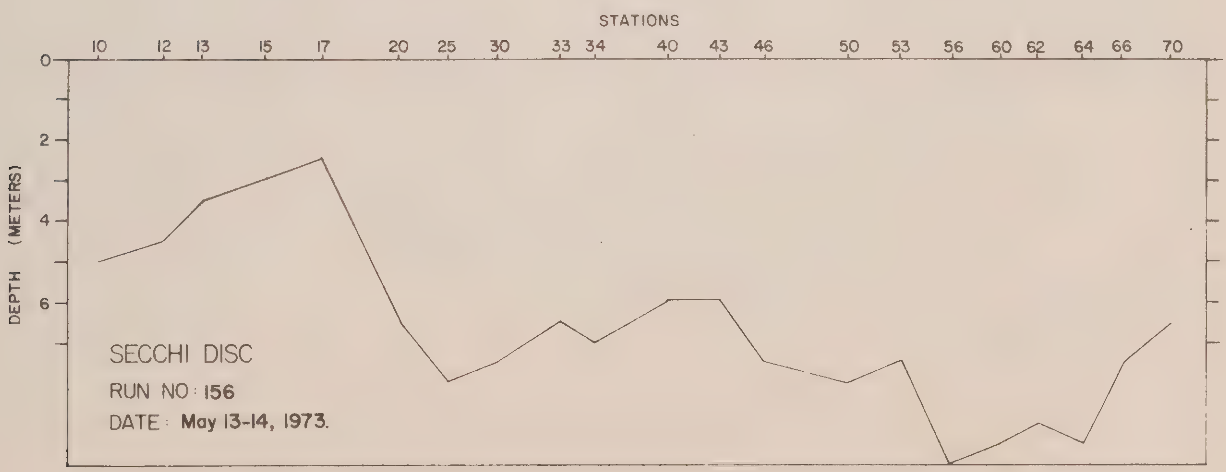

10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METRES)
0
50
100
150
200
BABINE LAKE
RUN NO: 318
DATE: Oct. 26-27, 1973.

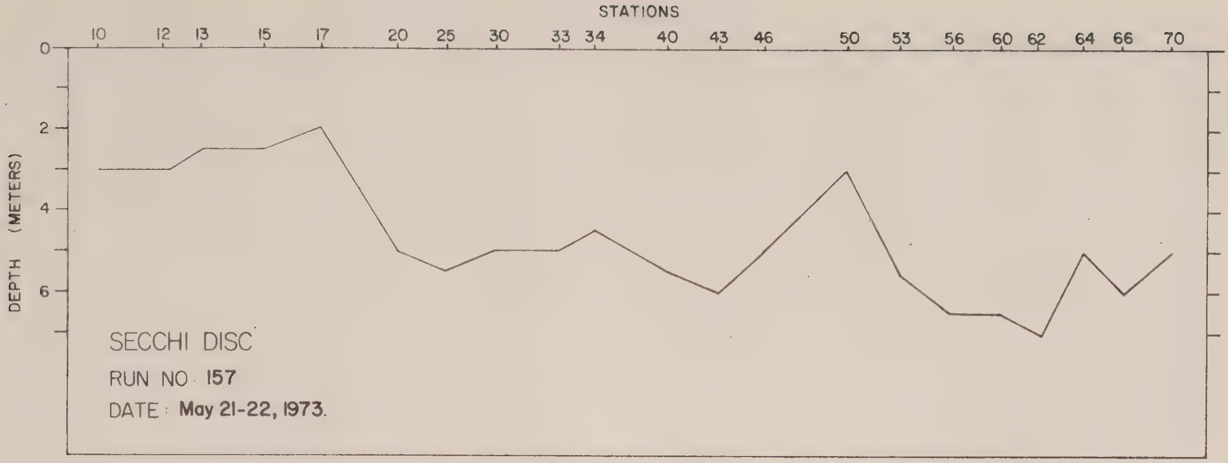

STATIONS
10
12
13
15
17
20
25
30
33
34
40
43
46
50
53
56
60
62
64
66
70
0
50
100
150
200
DEPTH (METRES)
7
7.5
6.5
6
5.5
5
4.5
BABINE LAKE
RUN NO: 321
DATE: Oct. 31, 1973.

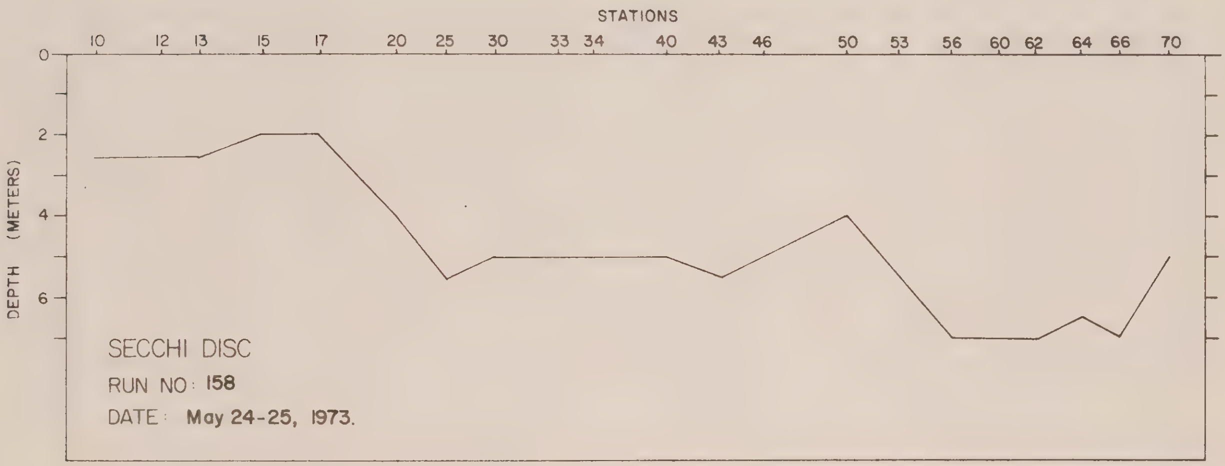
SECCHI DEPTH (MAY 5 - OCTOBER 31)

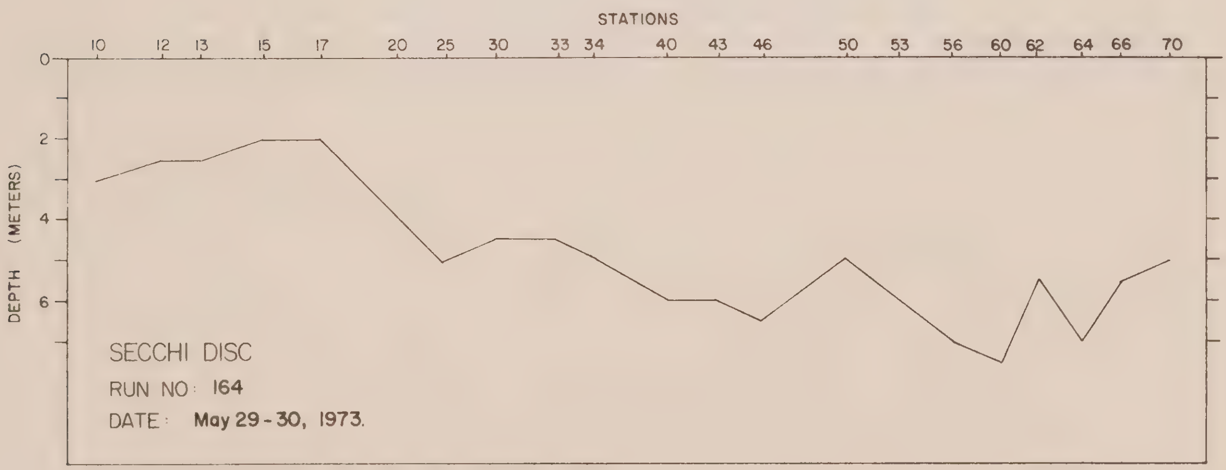

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METERS)
0 2 4 6
SECCHI DISC
RUN NO: 154 b
DATE: May 5, 1973.

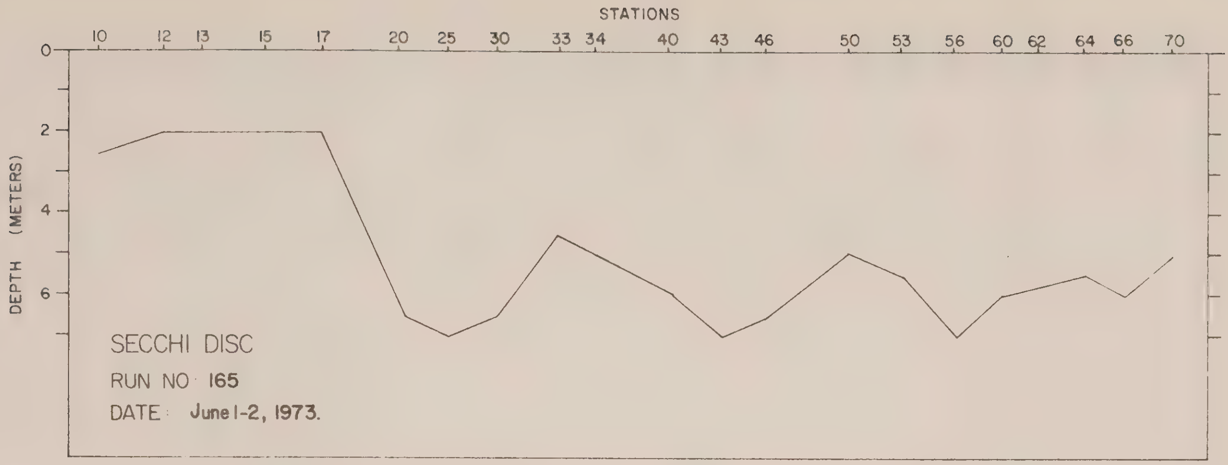

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METERS)
0 2 4 6
SECCHI DISC
RUN NO: 155
DATE: May 9-10, 1973.

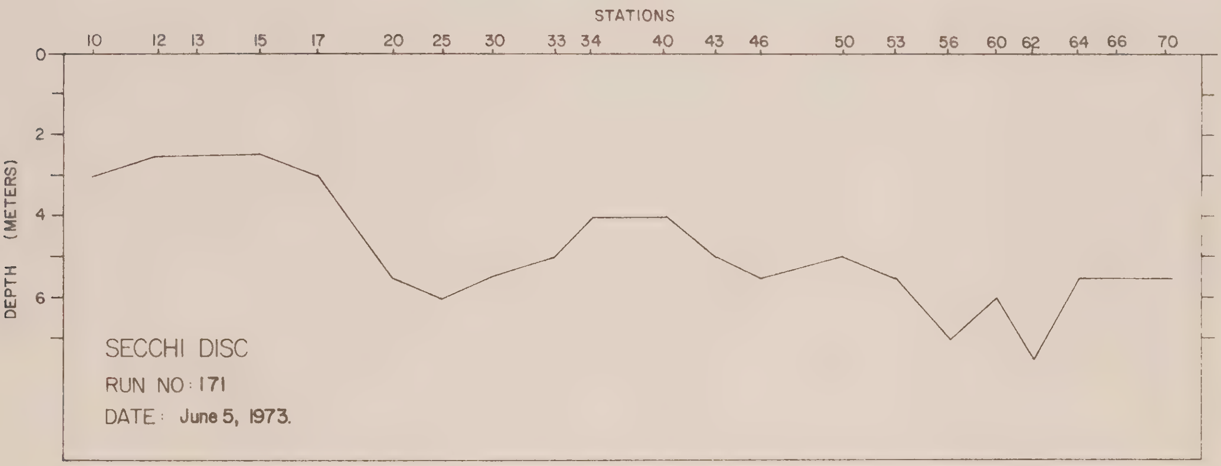

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METERS)
0 2 4 6
SECCHI DISC
RUN NO: 156
DATE: May 13-14, 1973.

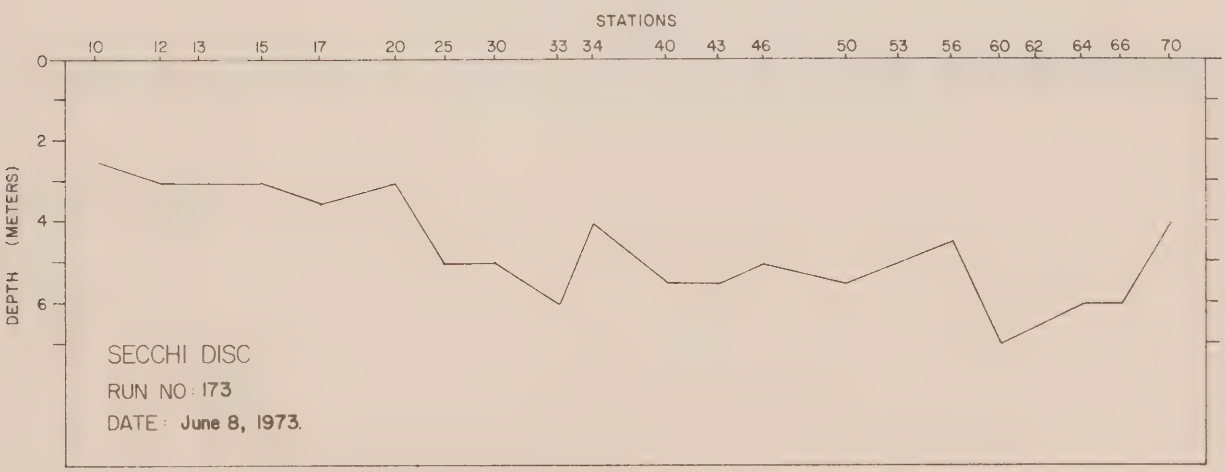

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METERS)
0 2 4 6
SECCHI DISC
RUN NO: 157
DATE: May 21-22, 1973.

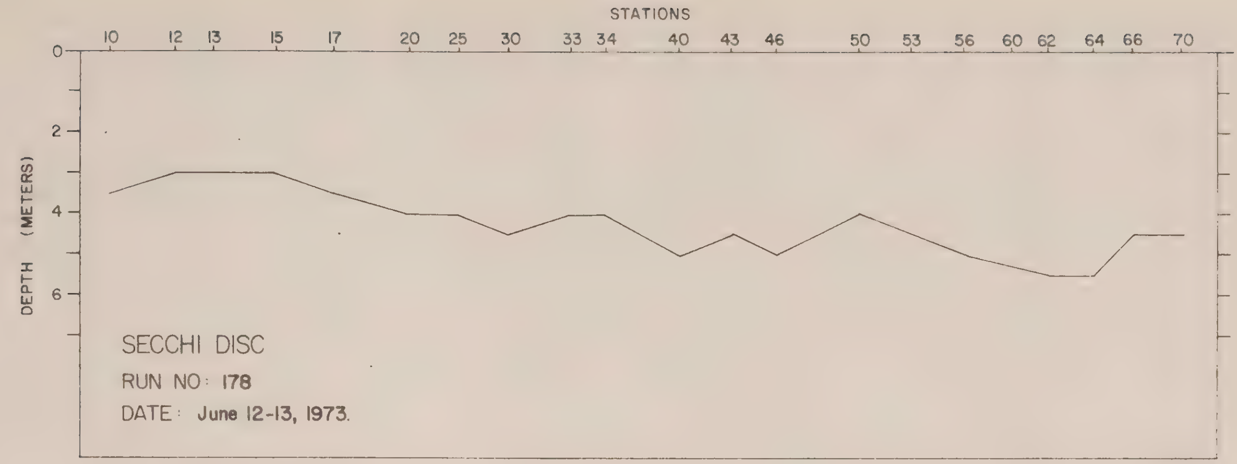

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METERS)
0 2 4 6
SECCHI DISC
RUN NO: 158
DATE: May 24-25, 1973.

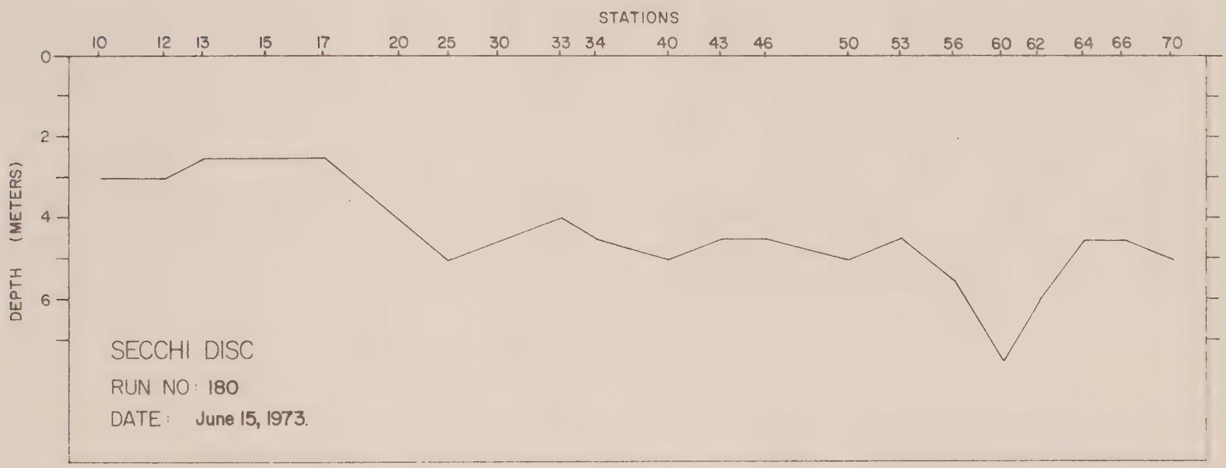

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
DEPTH (METERS)
0 2 4 6
SECCHI DISC
RUN NO: 164
DATE: May 29-30, 1973.

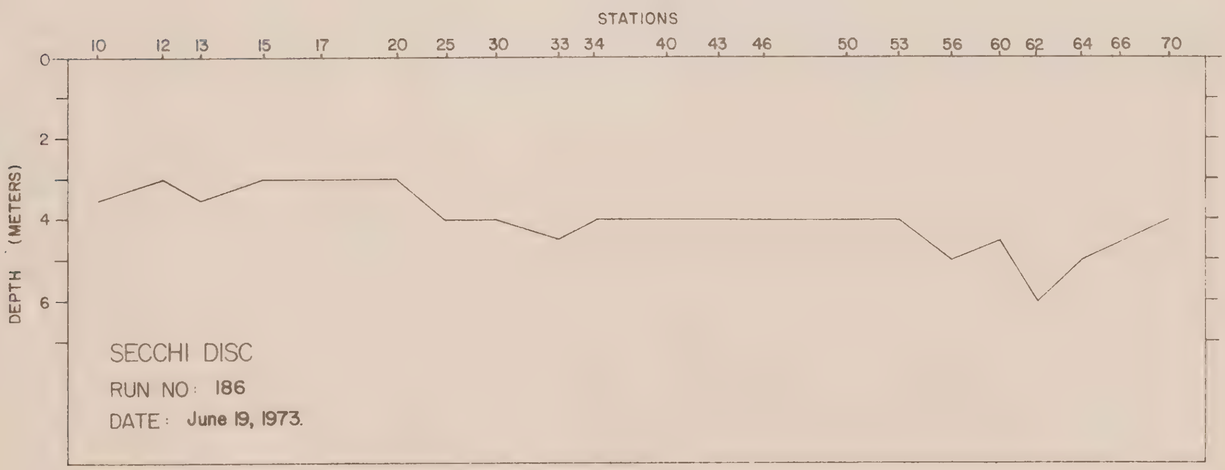

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 165
DATE: June 1-2, 1973.

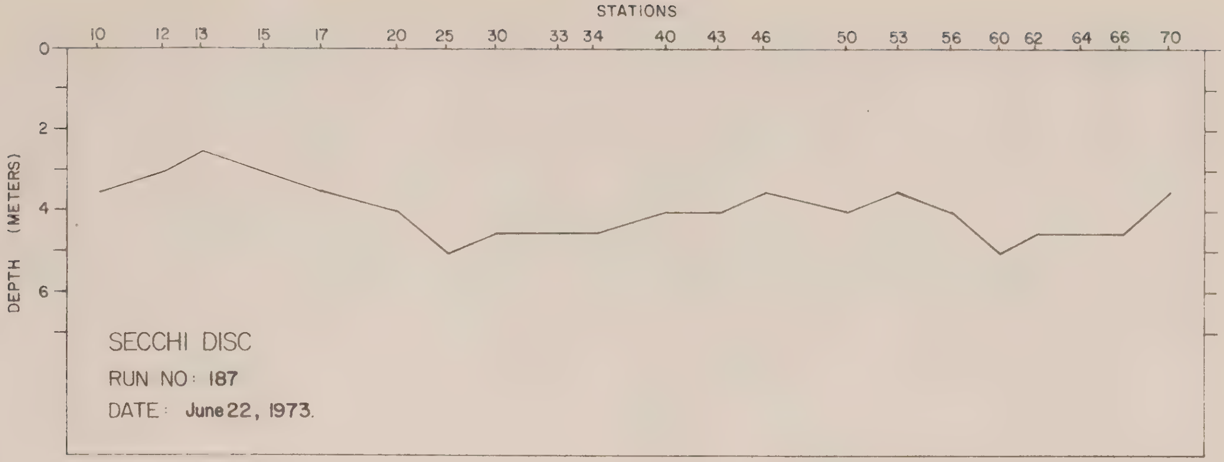

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 171
DATE: June 5, 1973.

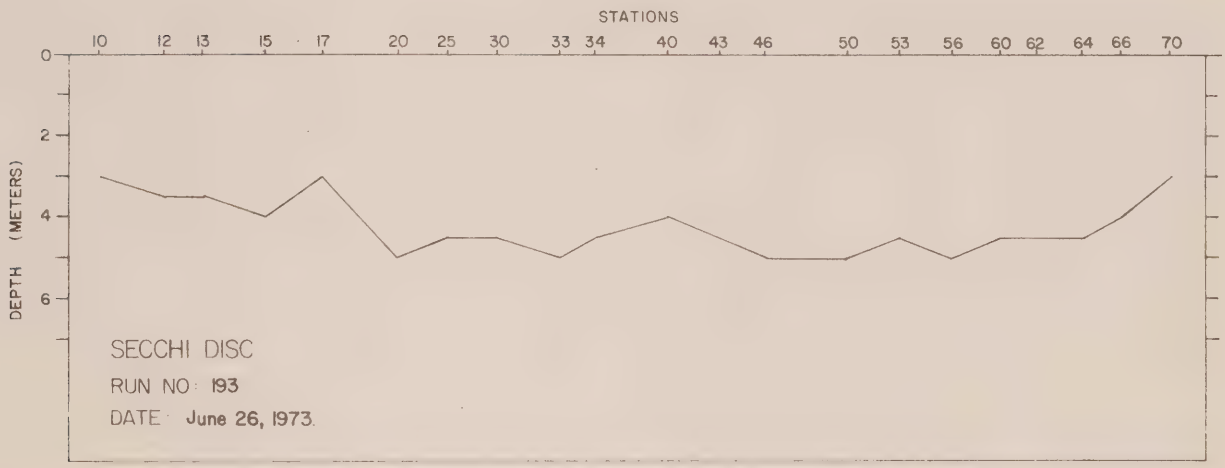

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 173
DATE: June 8, 1973.

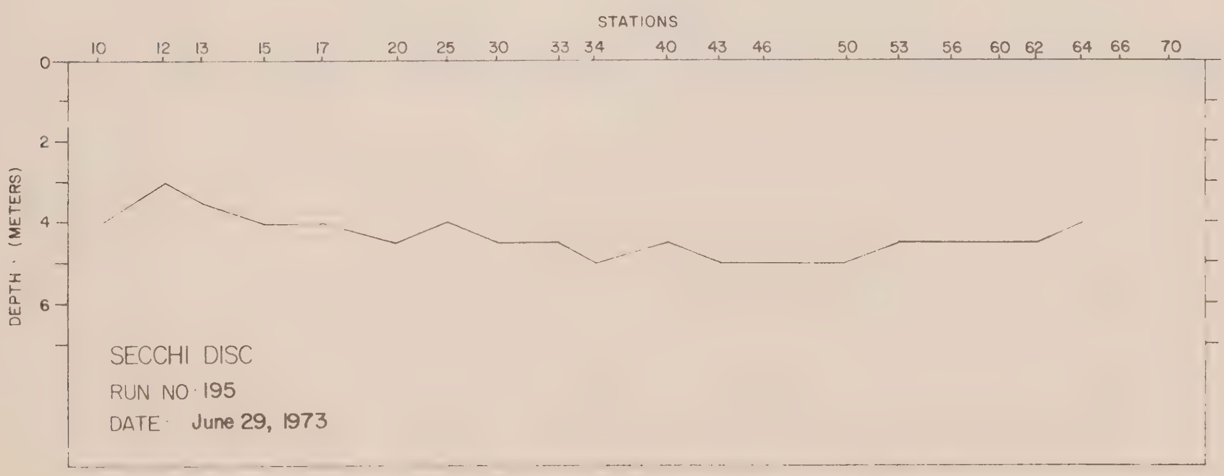

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 178
DATE: June 12-13, 1973.

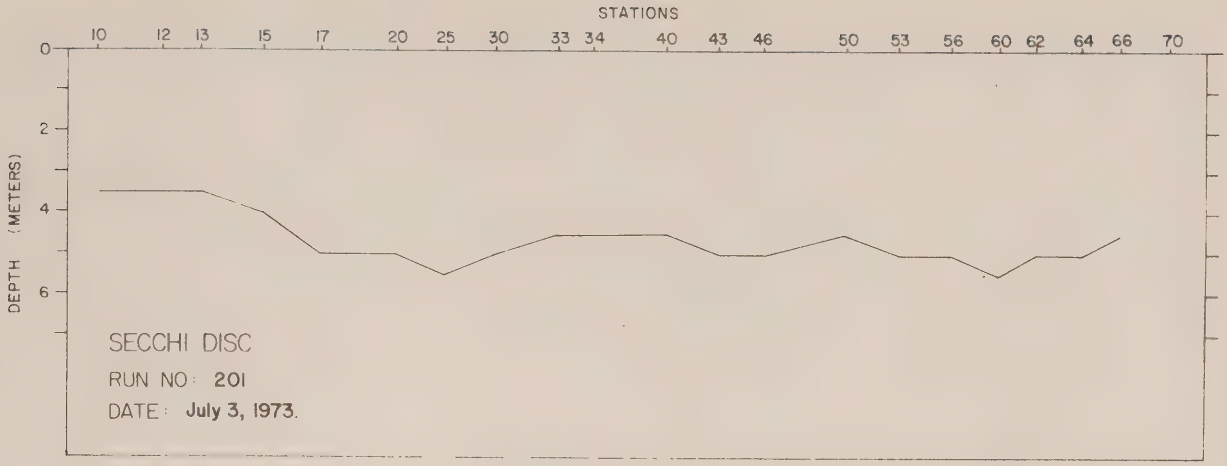

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 180
DATE: June 15, 1973.

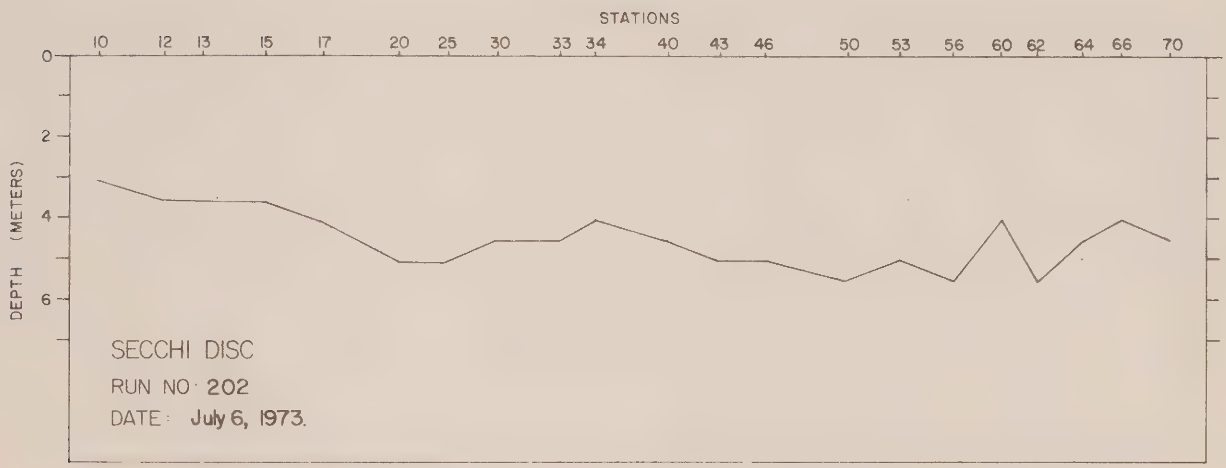

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 186
DATE: June 19, 1973.

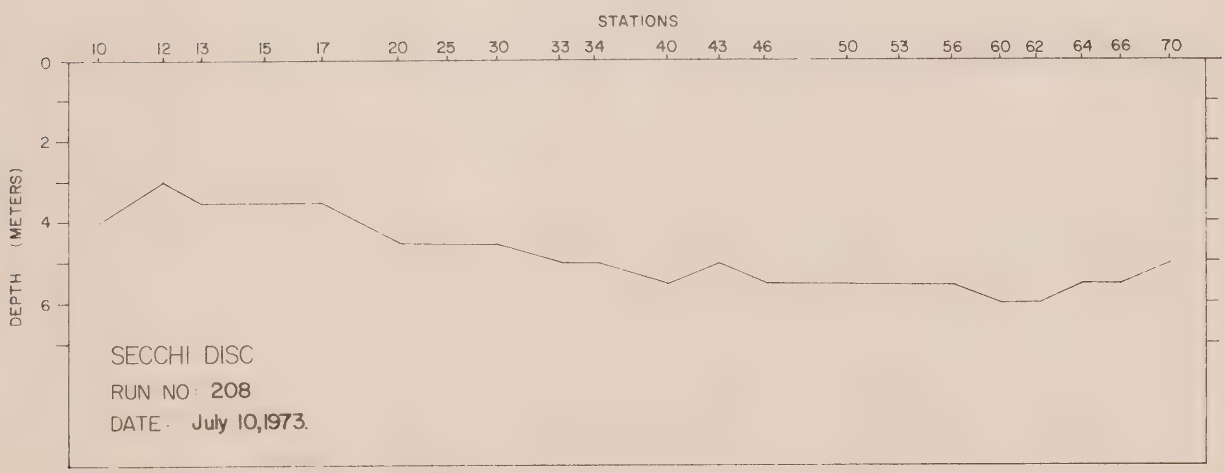

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 187
DATE: June 22, 1973.

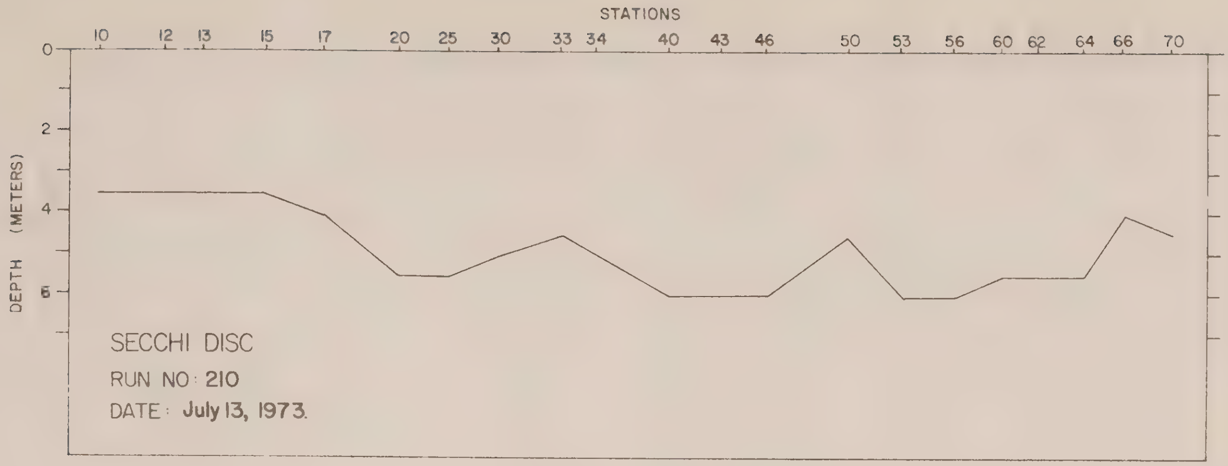

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 193
DATE: June 26, 1973.

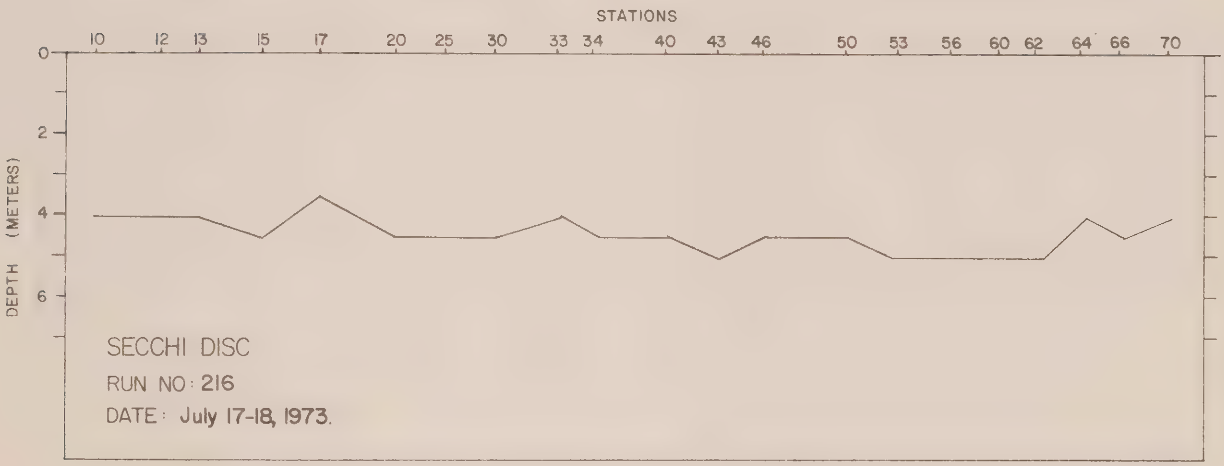

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 195
DATE: June 29, 1973

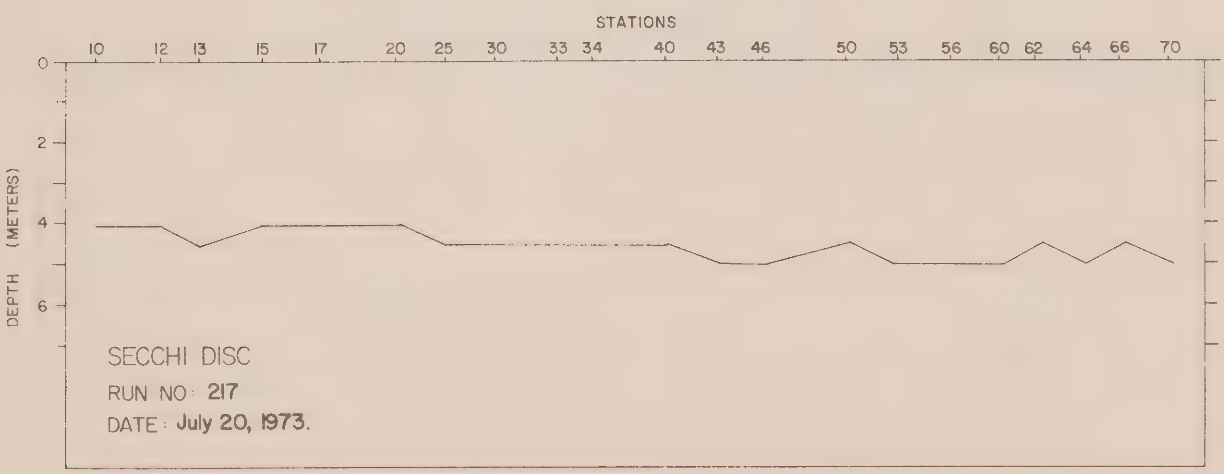

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 201
DATE: July 3, 1973.

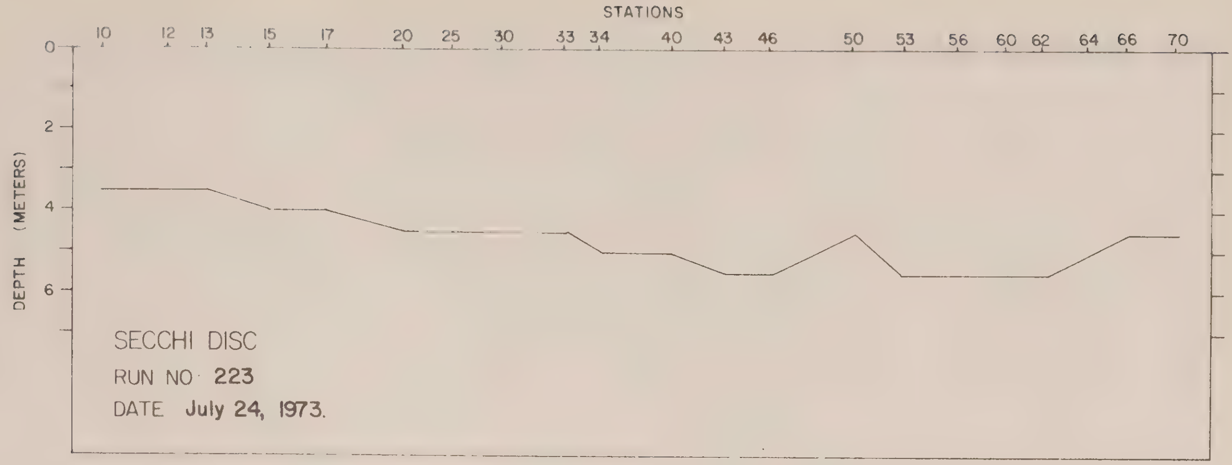

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 202
DATE: July 6, 1973.

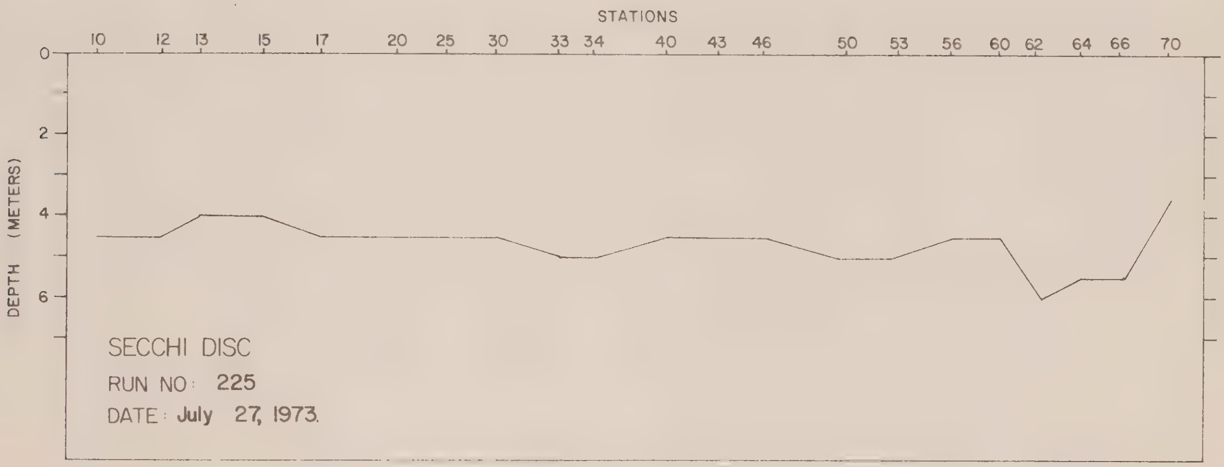

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 208
DATE: July 10,1973.

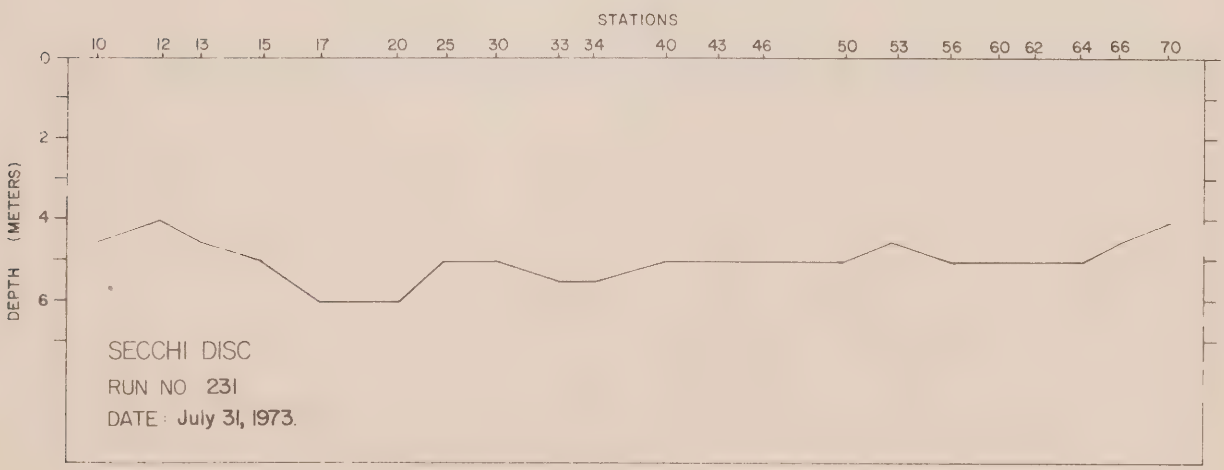

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 210
DATE: July 13, 1973.

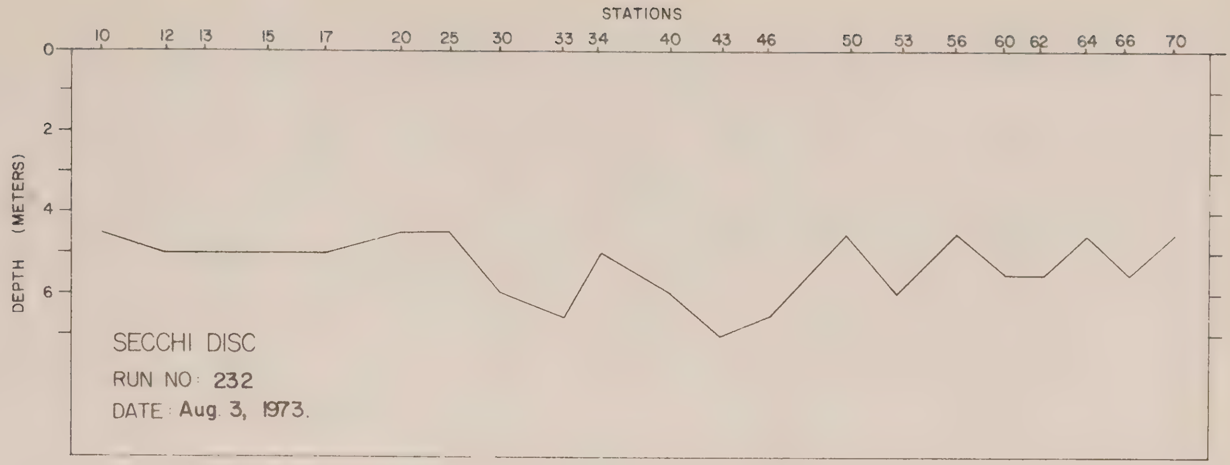

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 216
DATE: July 17-18, 1973.

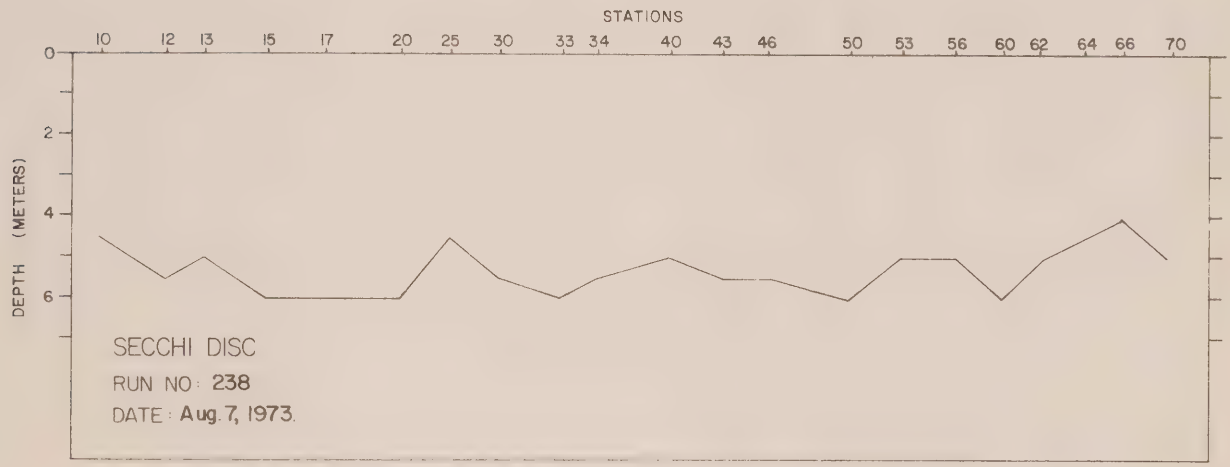

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 217
DATE: July 20, 1973.

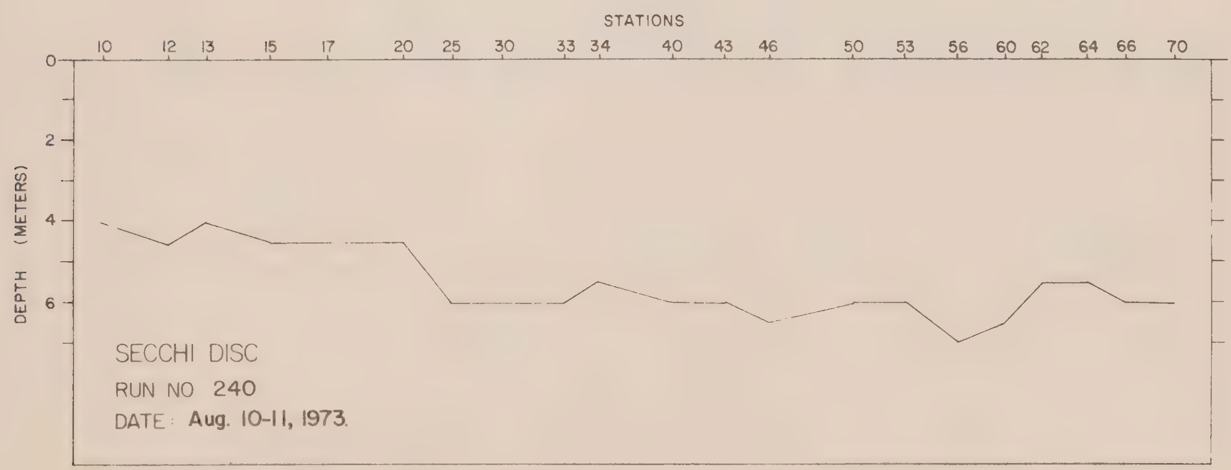

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO 223
DATE July 24, 1973.

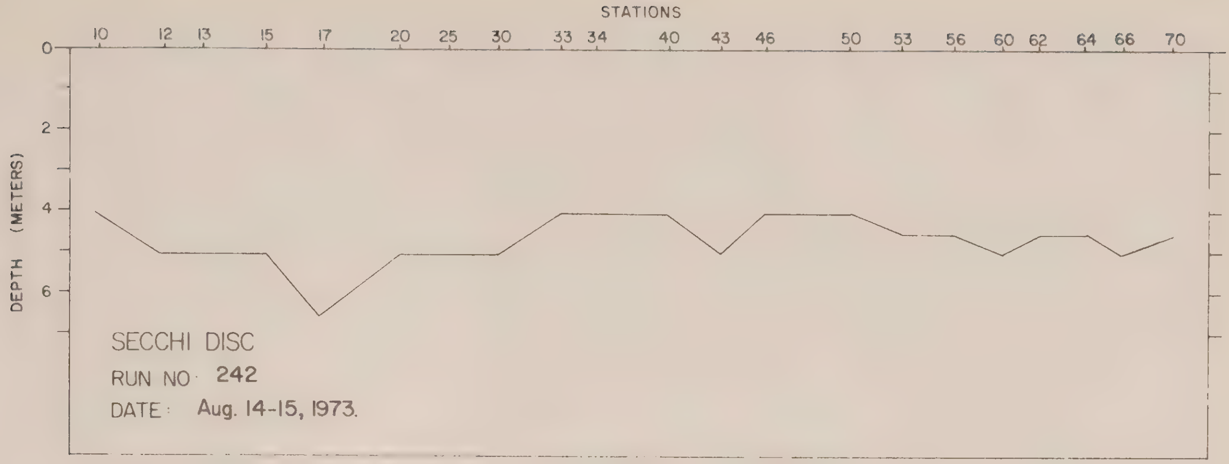

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 225
DATE: July 27, 1973.

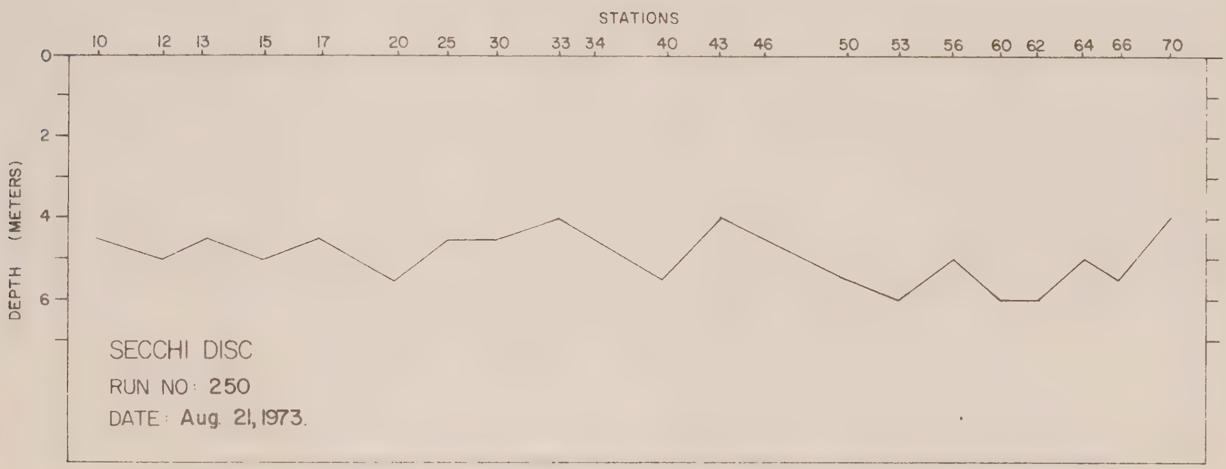

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO 231
DATE: July 31, 1973.

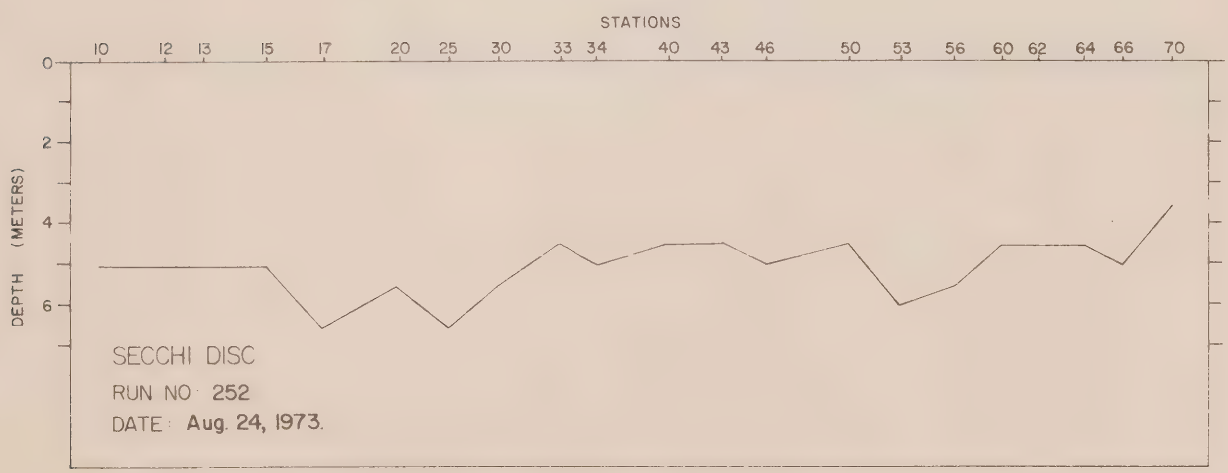

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 232
DATE: Aug. 3, 1973.

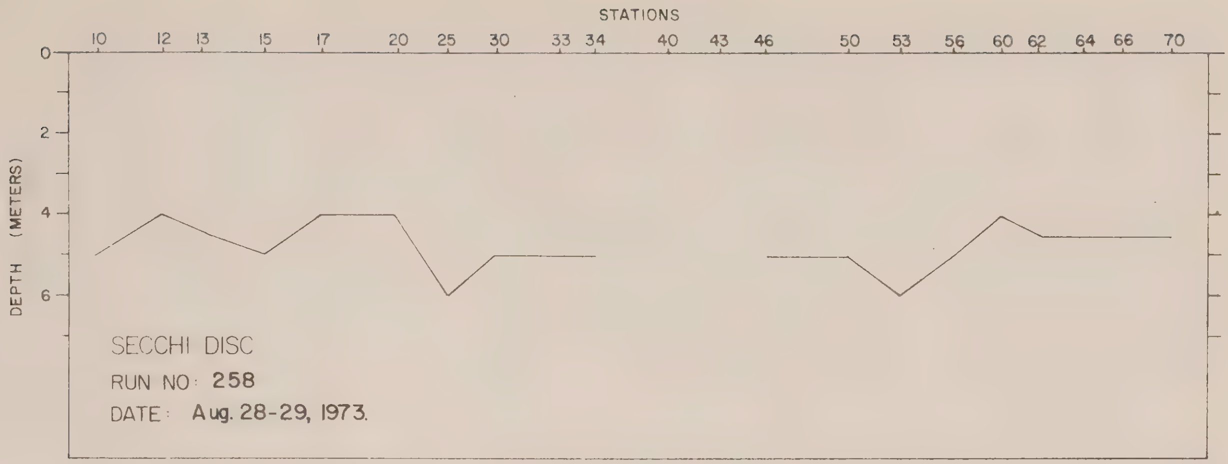

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO: 238
DATE: Aug. 7, 1973.

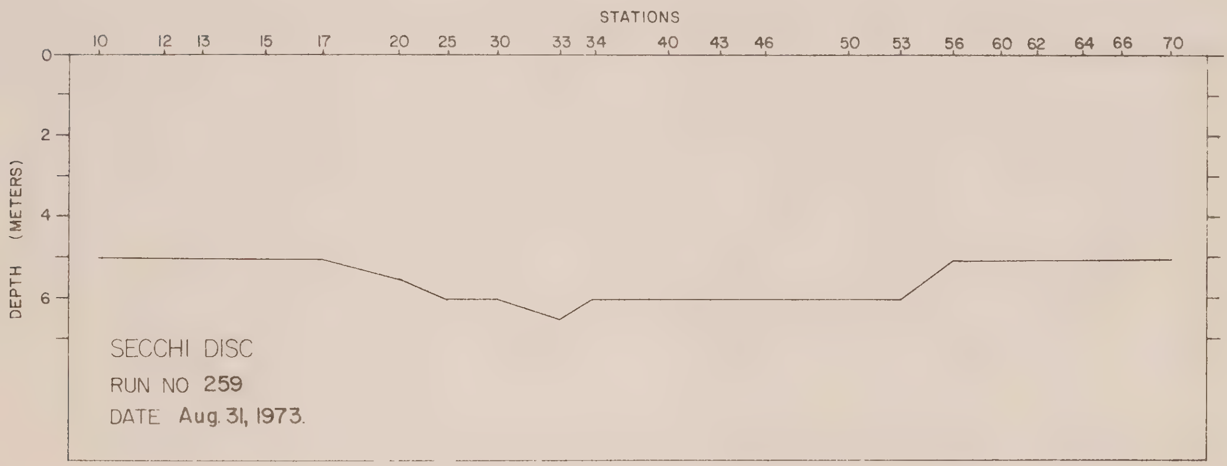

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO 240
DATE: Aug. 10-11, 1973.

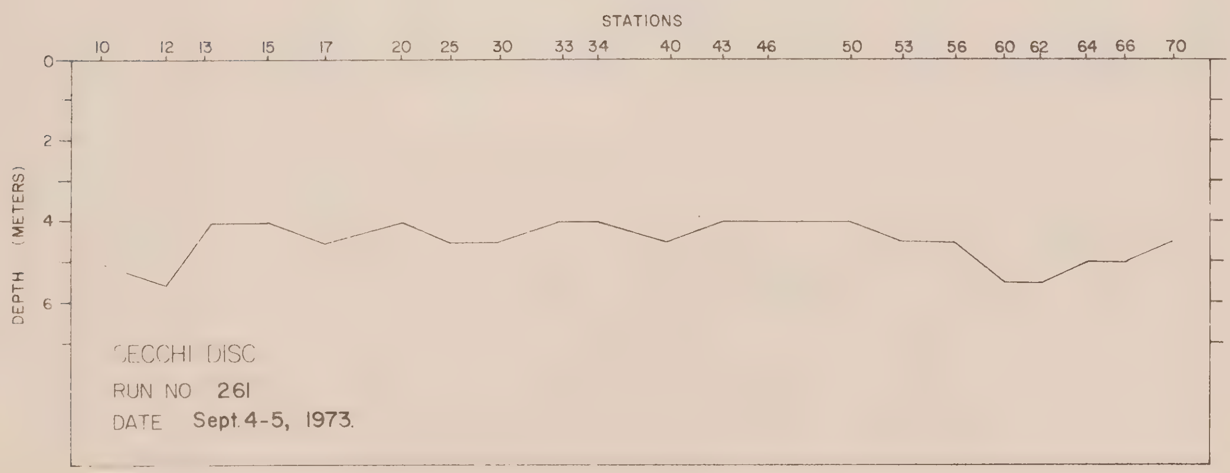

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 242
DATE: Aug. 14-15, 1973.

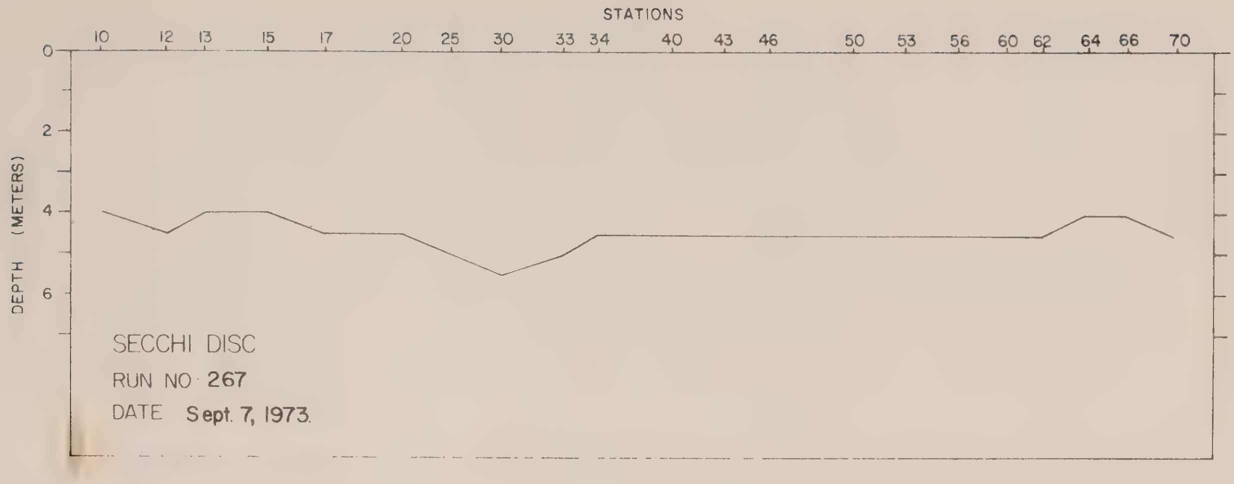

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 250
DATE: Aug. 21, 1973.

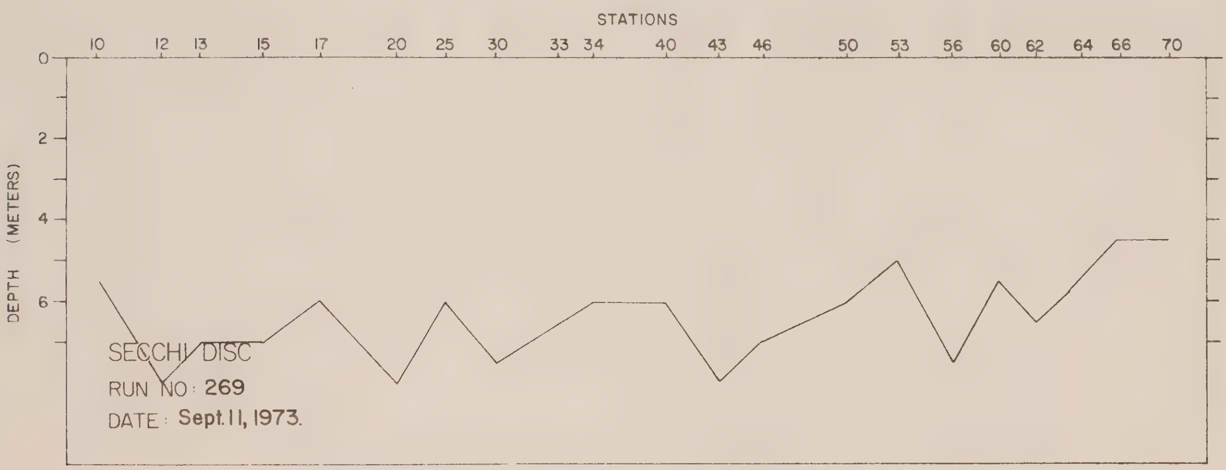

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 252
DATE: Aug. 24, 1973.

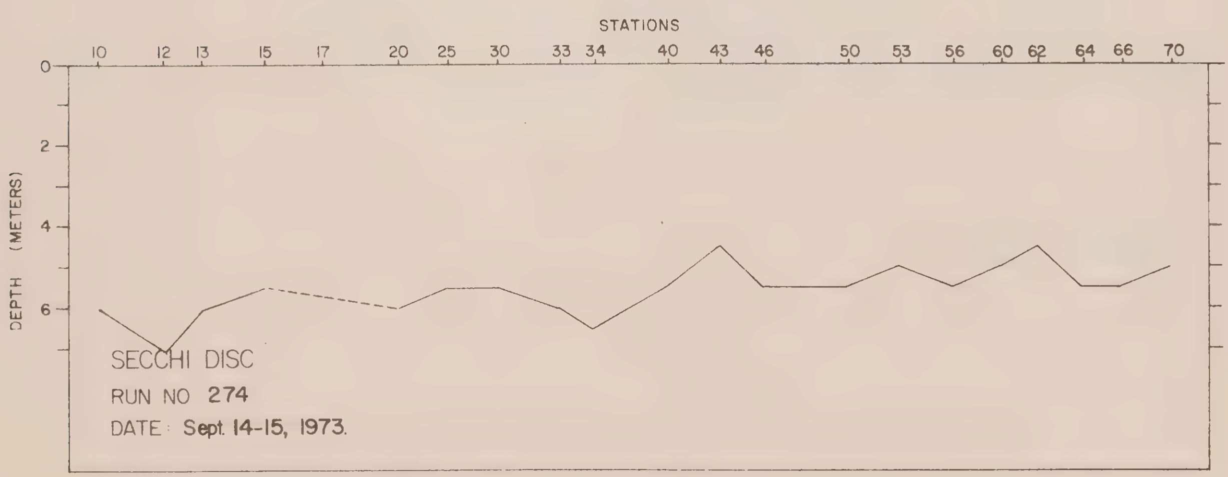

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 258
DATE: Aug. 28-29, 1973.

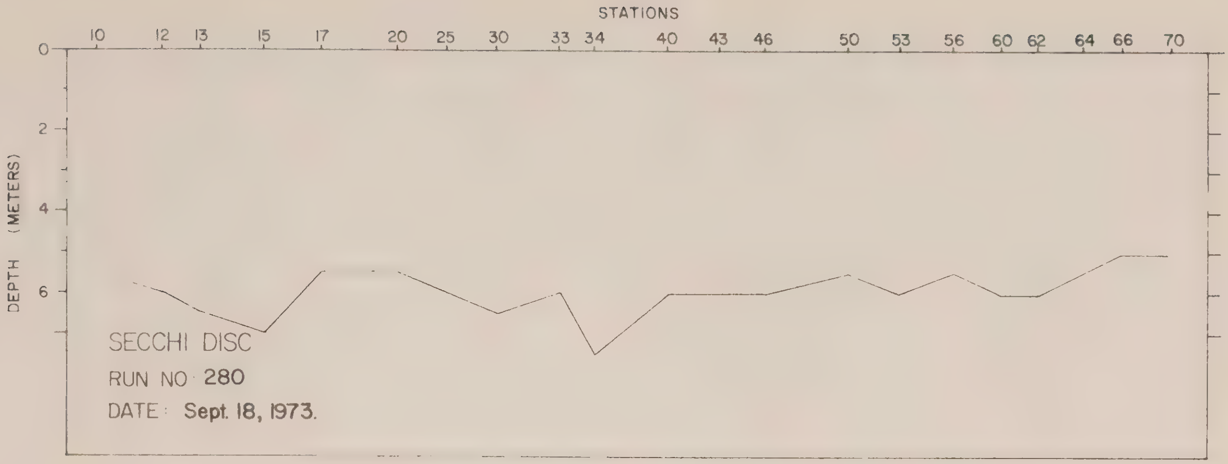

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO 259
DATE Aug. 31, 1973.

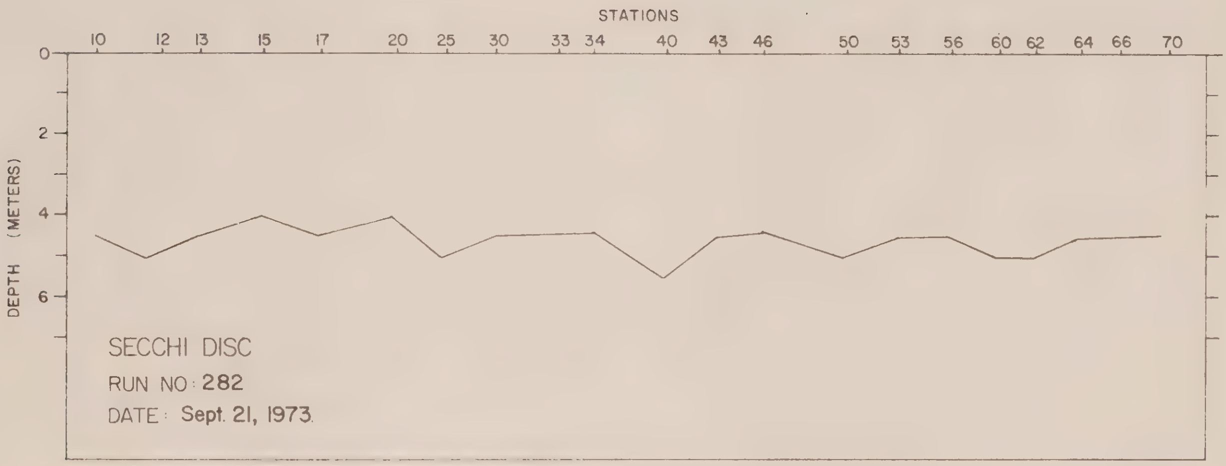

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO 261
DATE Sept. 4-5, 1973.

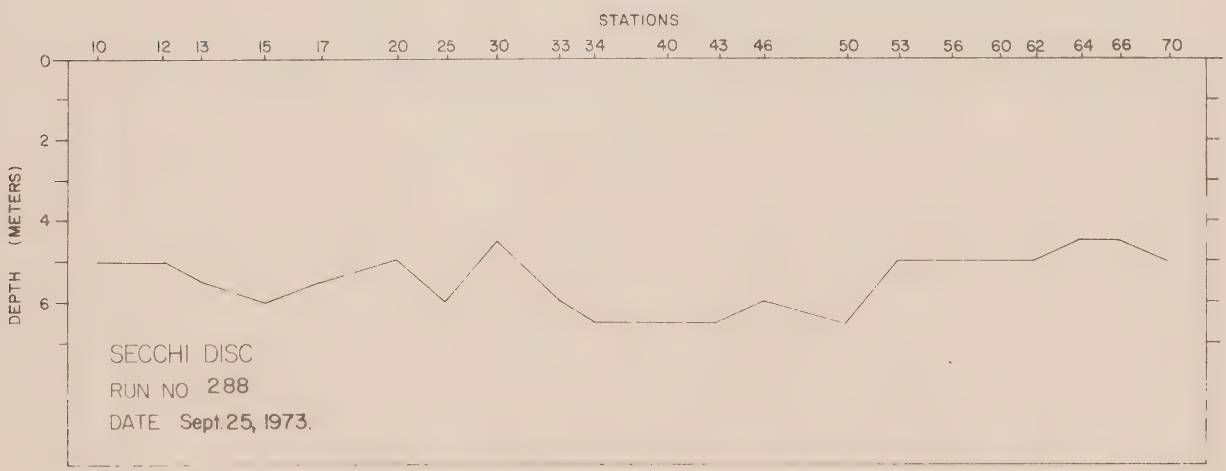

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 267
DATE Sept. 7, 1973.

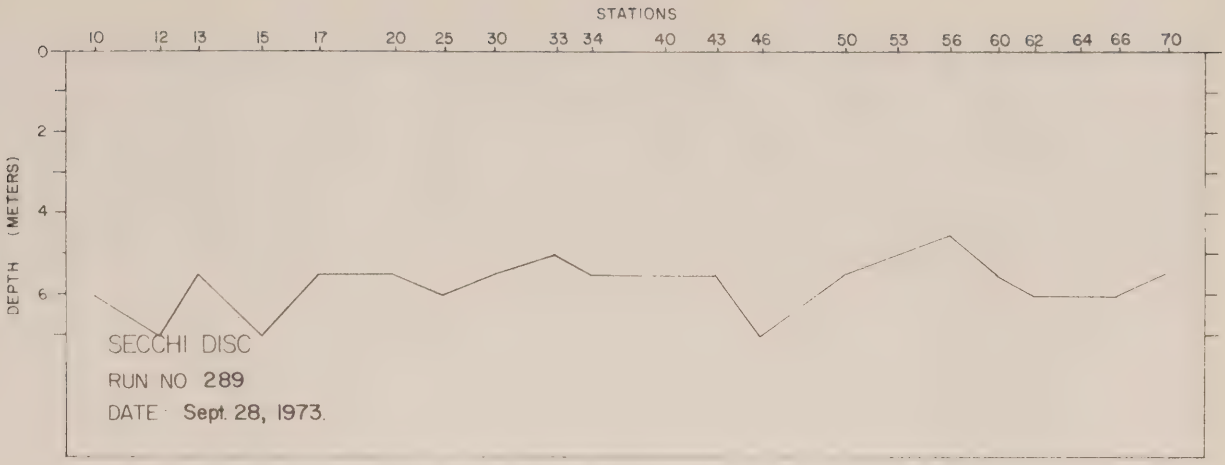

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 269
DATE: Sept. 11, 1973.

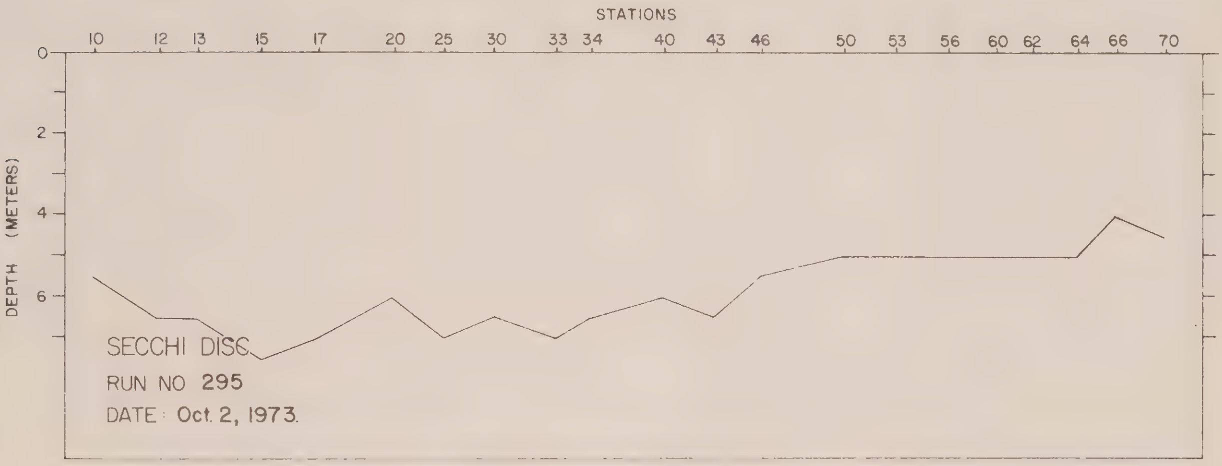

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO 274
DATE: Sept. 14-15, 1973.

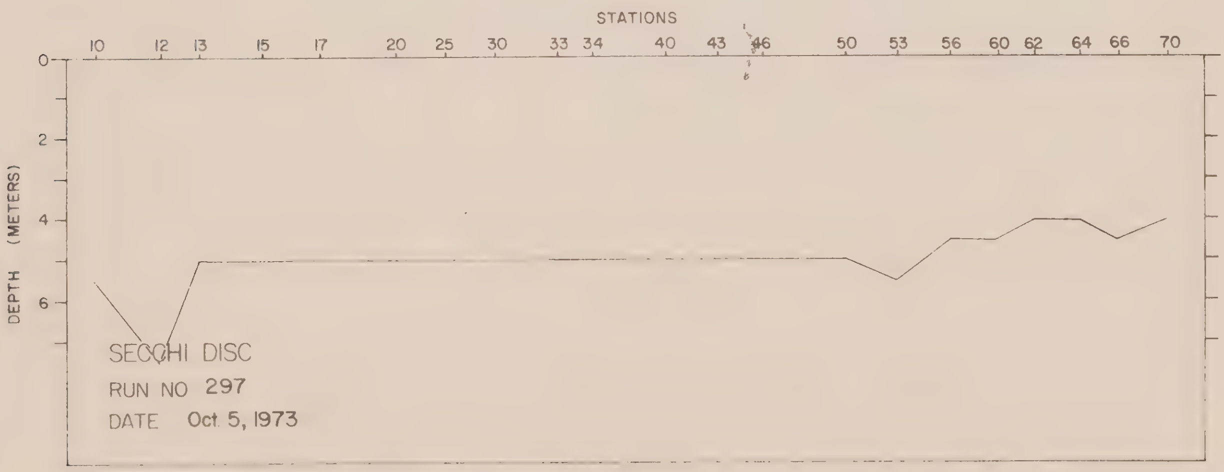

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO 280
DATE: Sept. 18, 1973.

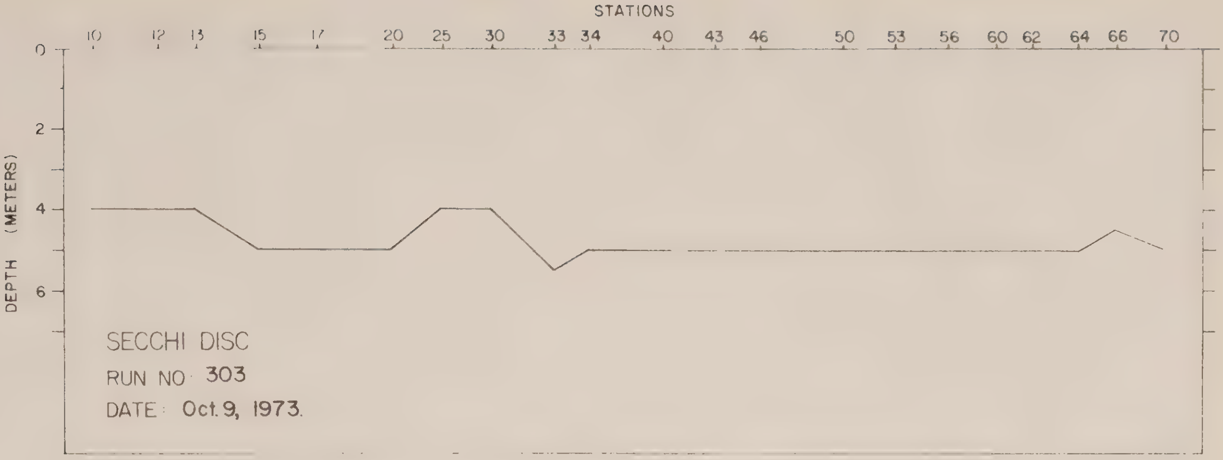

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO: 282
DATE: Sept. 21, 1973.

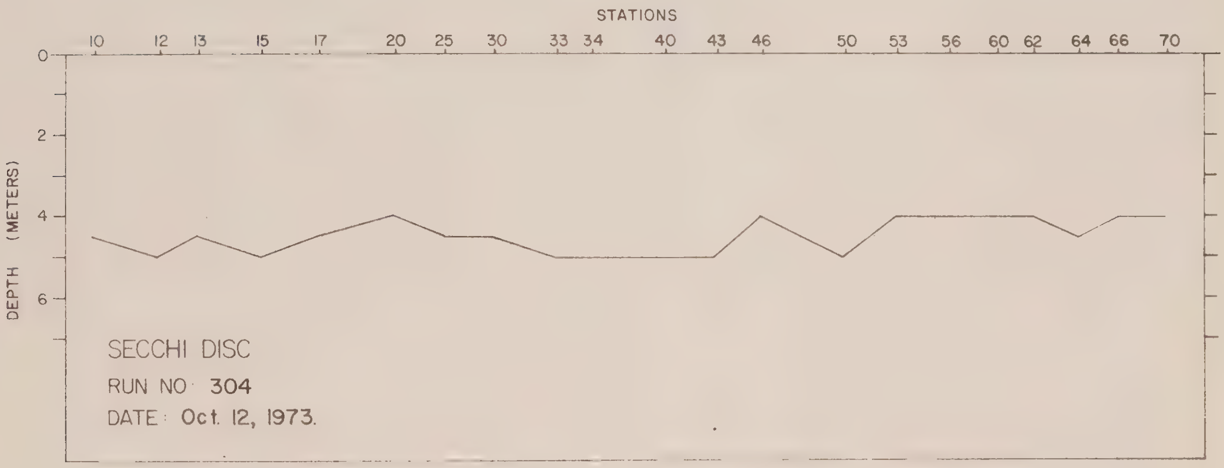

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0
2
4
6
DEPTH (METERS)
SECCHI DISC
RUN NO 288
DATE Sept. 25, 1973.

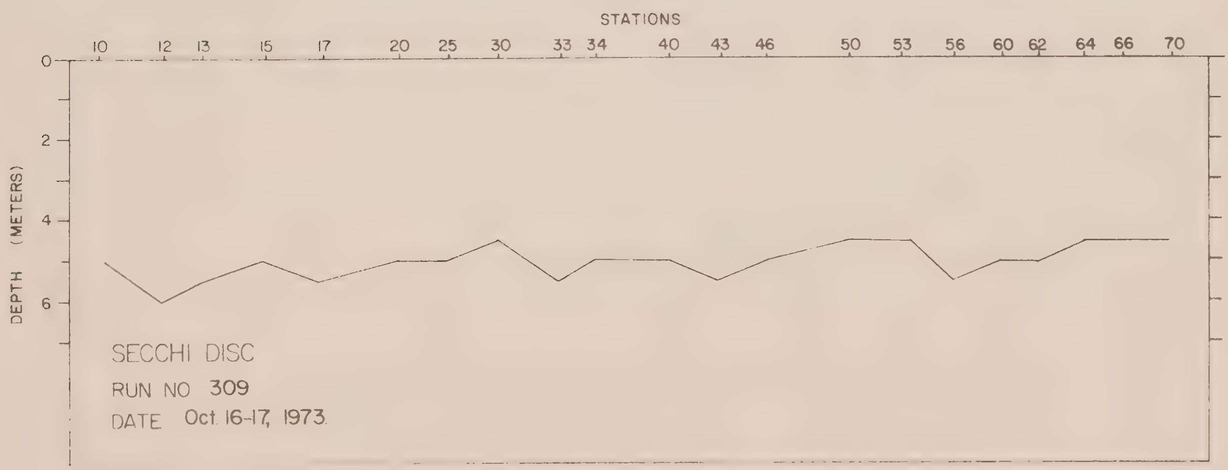

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO 289
DATE Sept. 28, 1973.

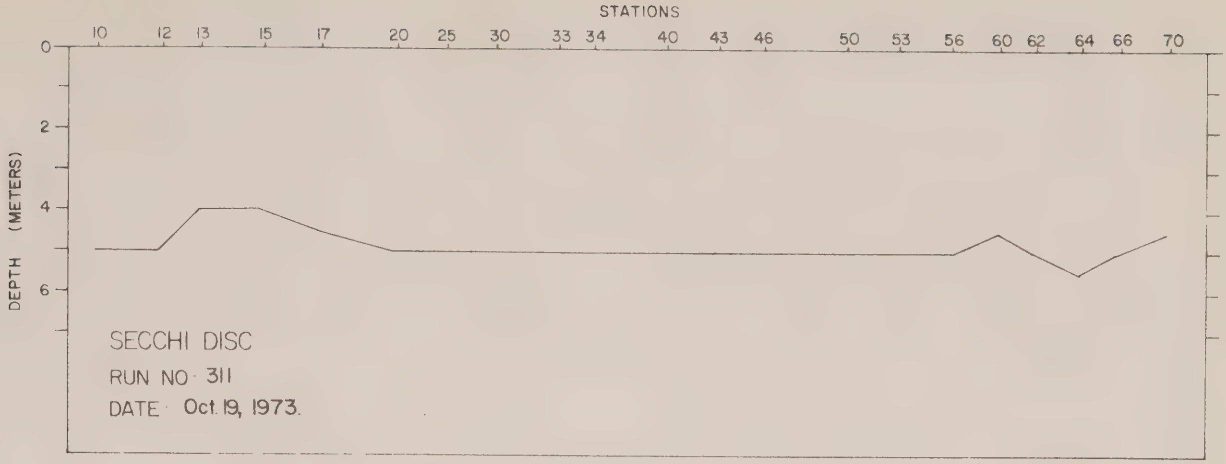

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO 295
DATE Oct. 2, 1973.

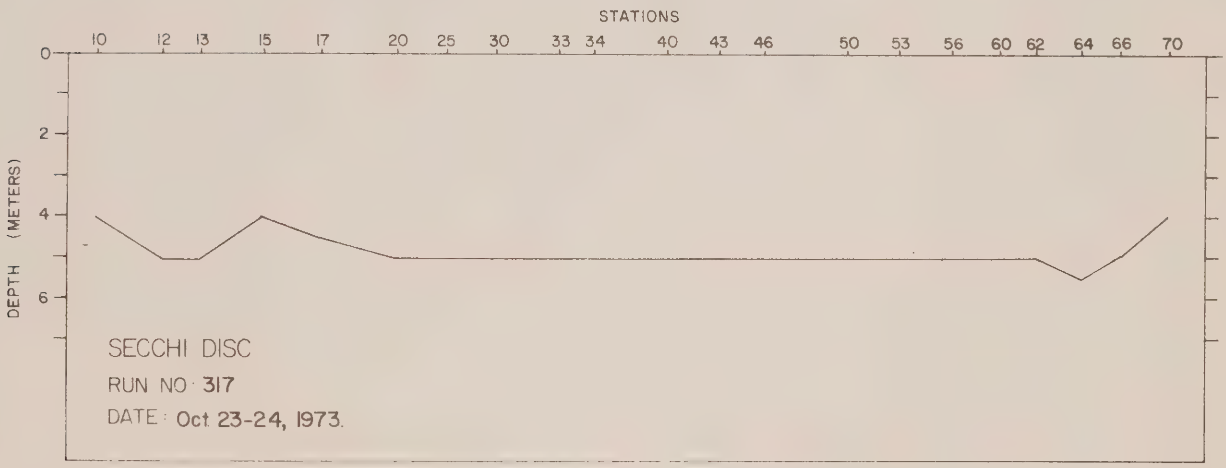

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO 297
DATE Oct. 5, 1973

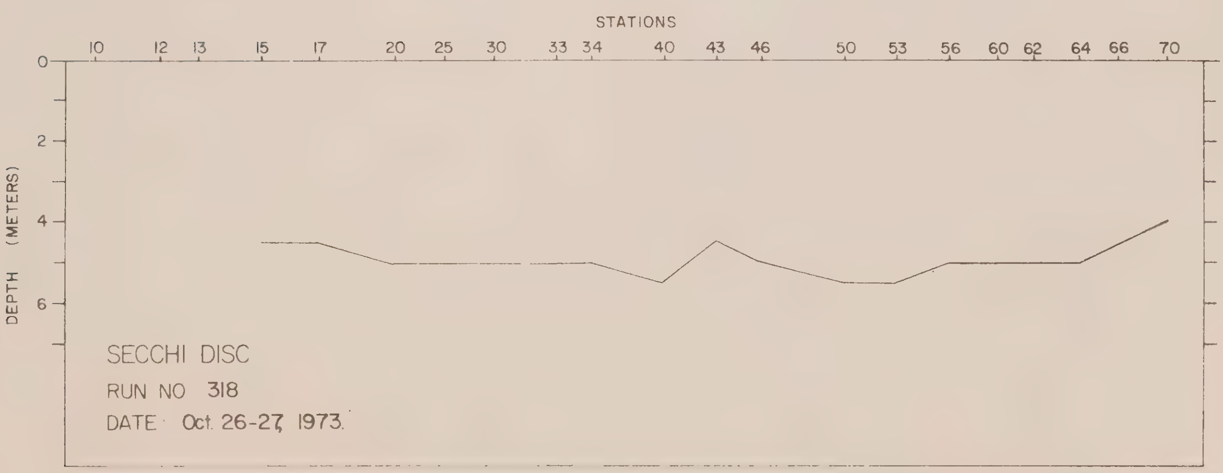

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO 303
DATE Oct. 9, 1973.

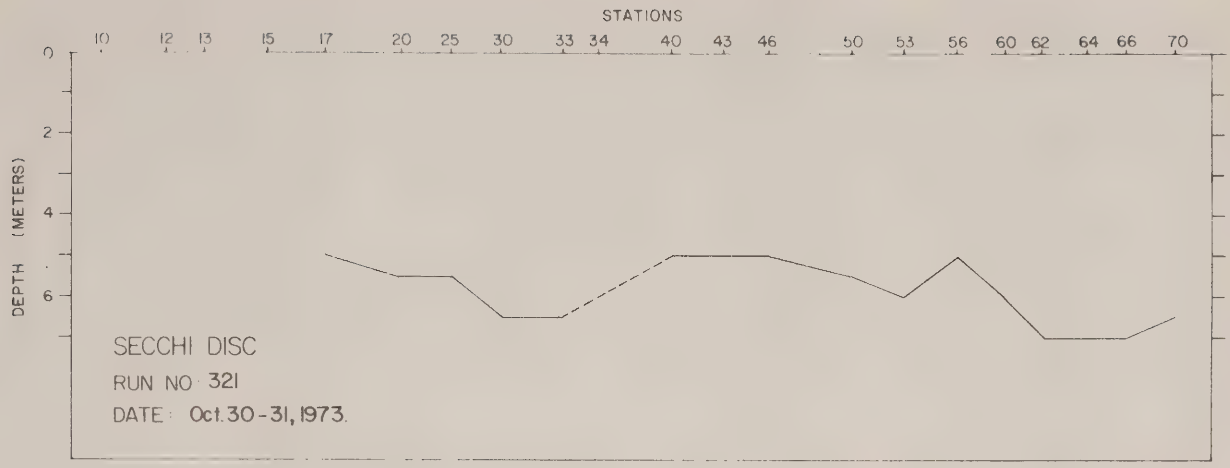

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO 304
DATE Oct. 12, 1973.


STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO 309
DATE Oct. 16-17, 1973.

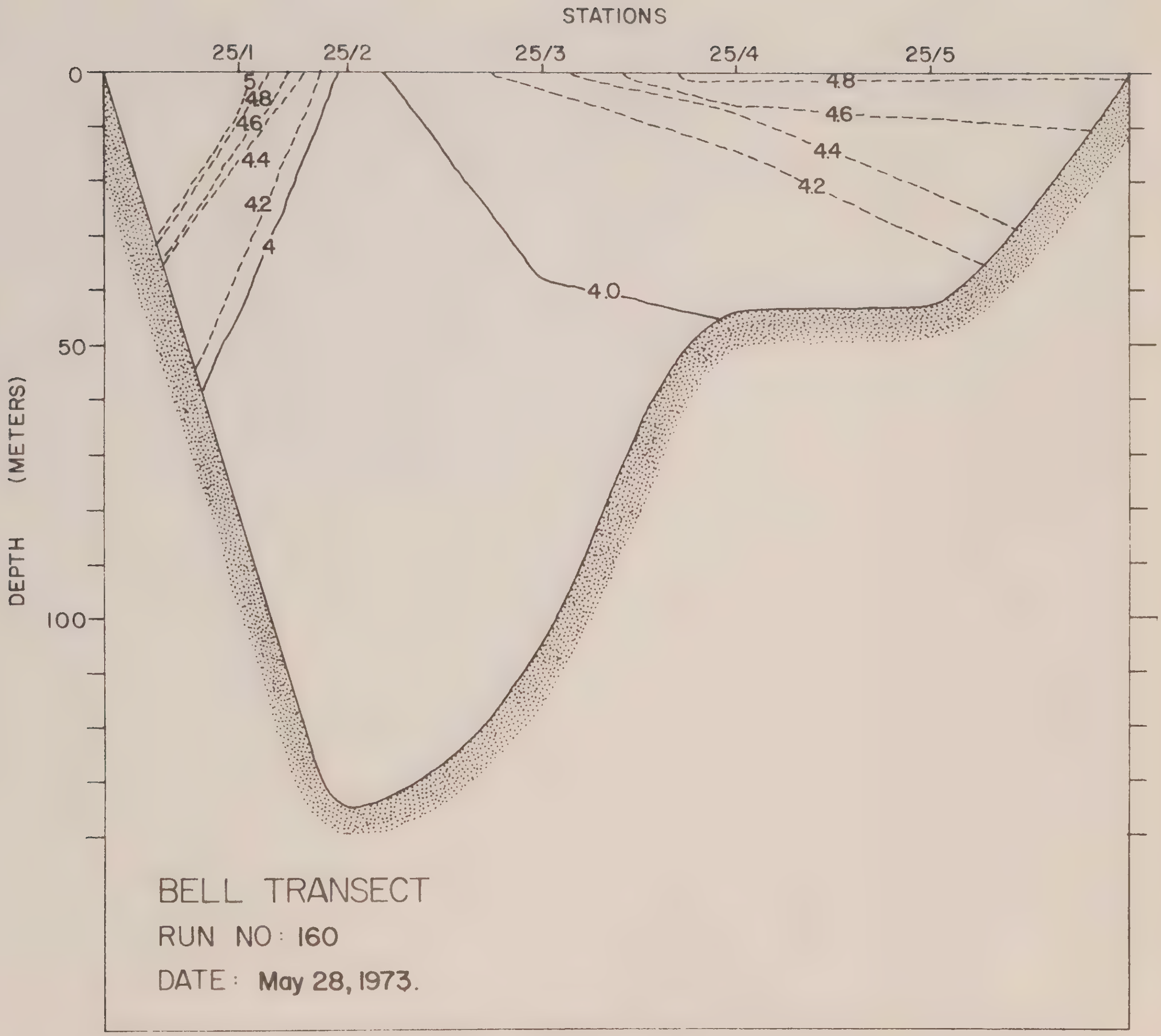

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO 311
DATE Oct. 19, 1973.

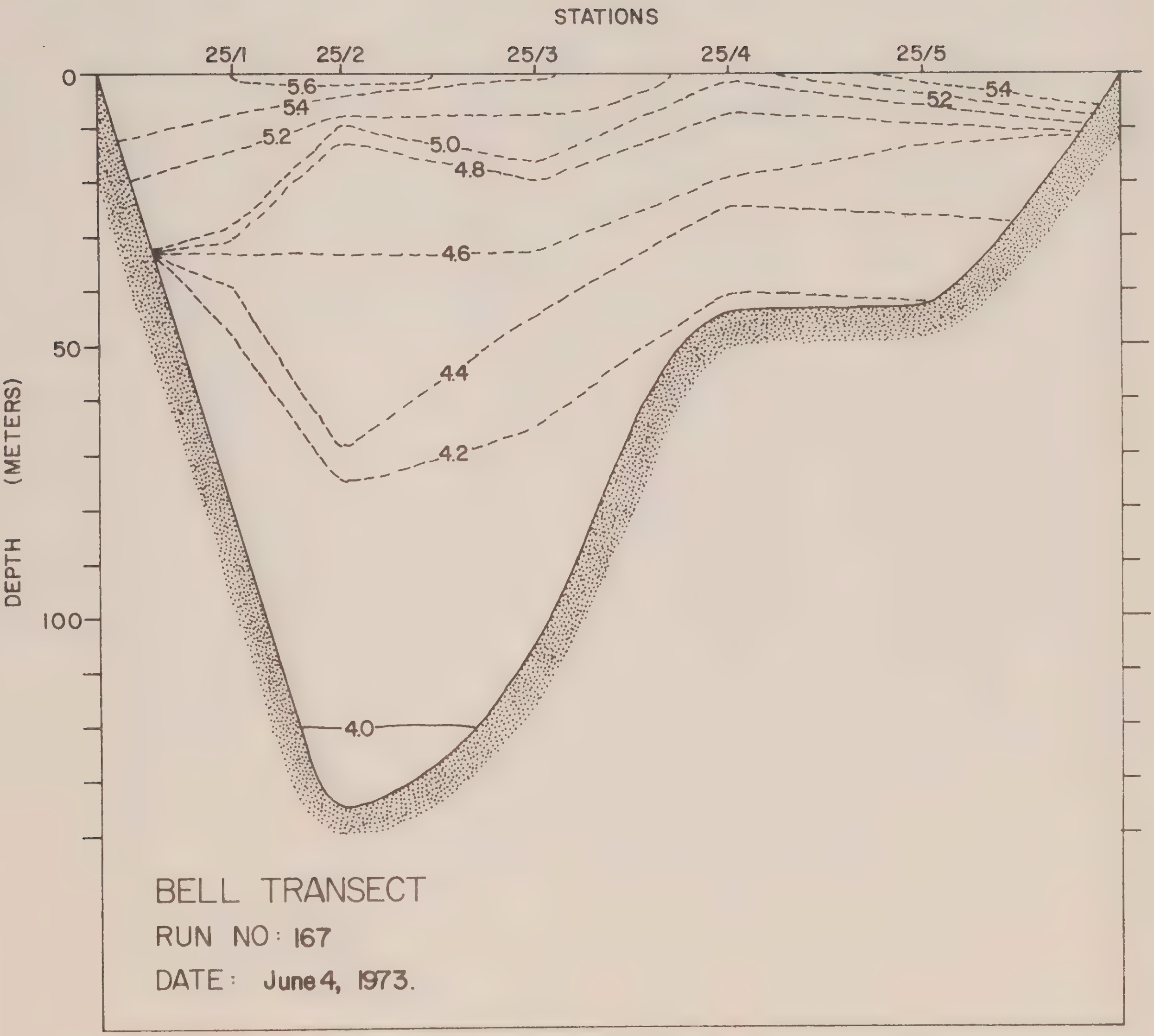

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO 317
DATE: Oct. 23-24, 1973.

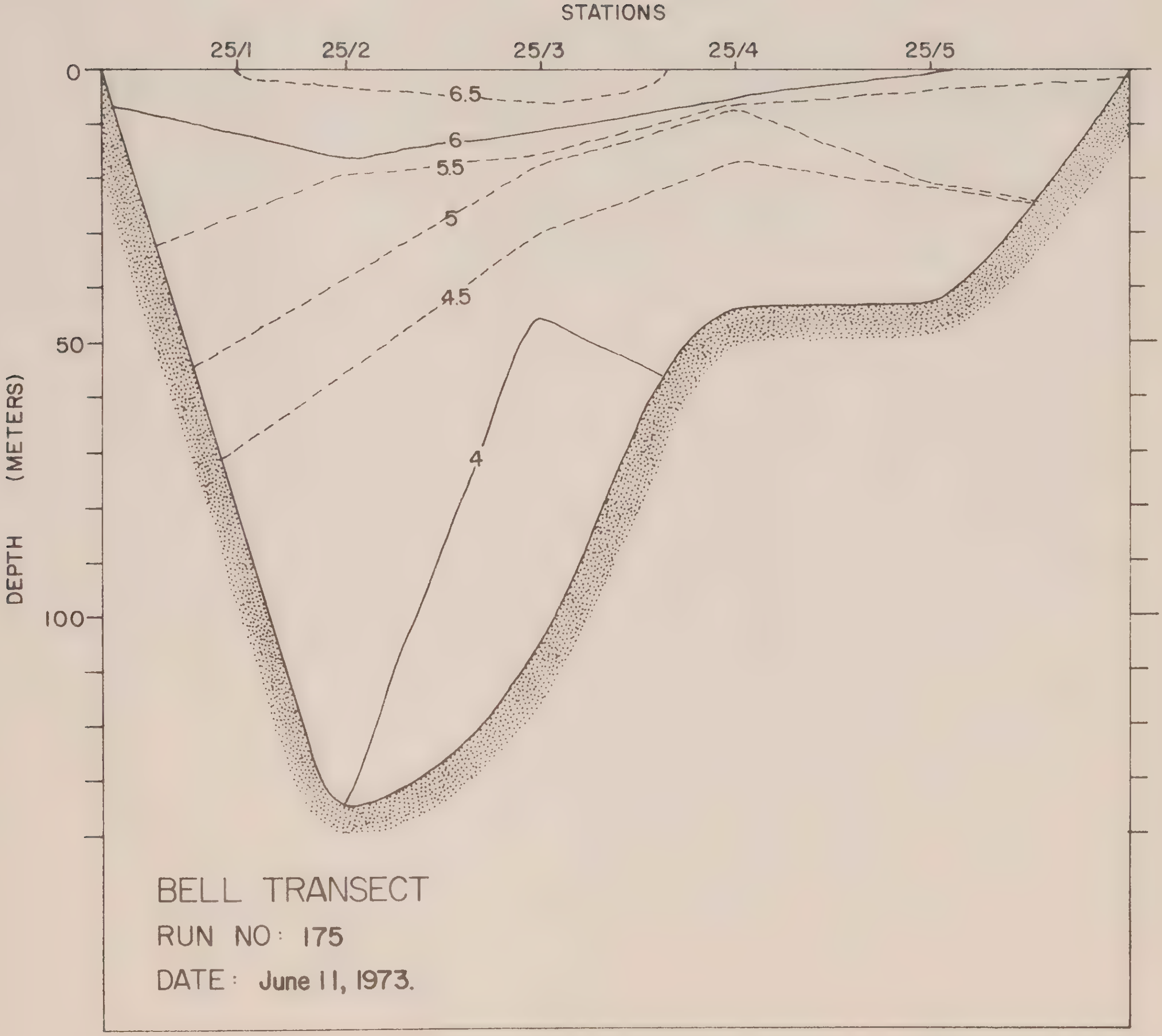

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO 318
DATE Oct. 26-27, 1973.

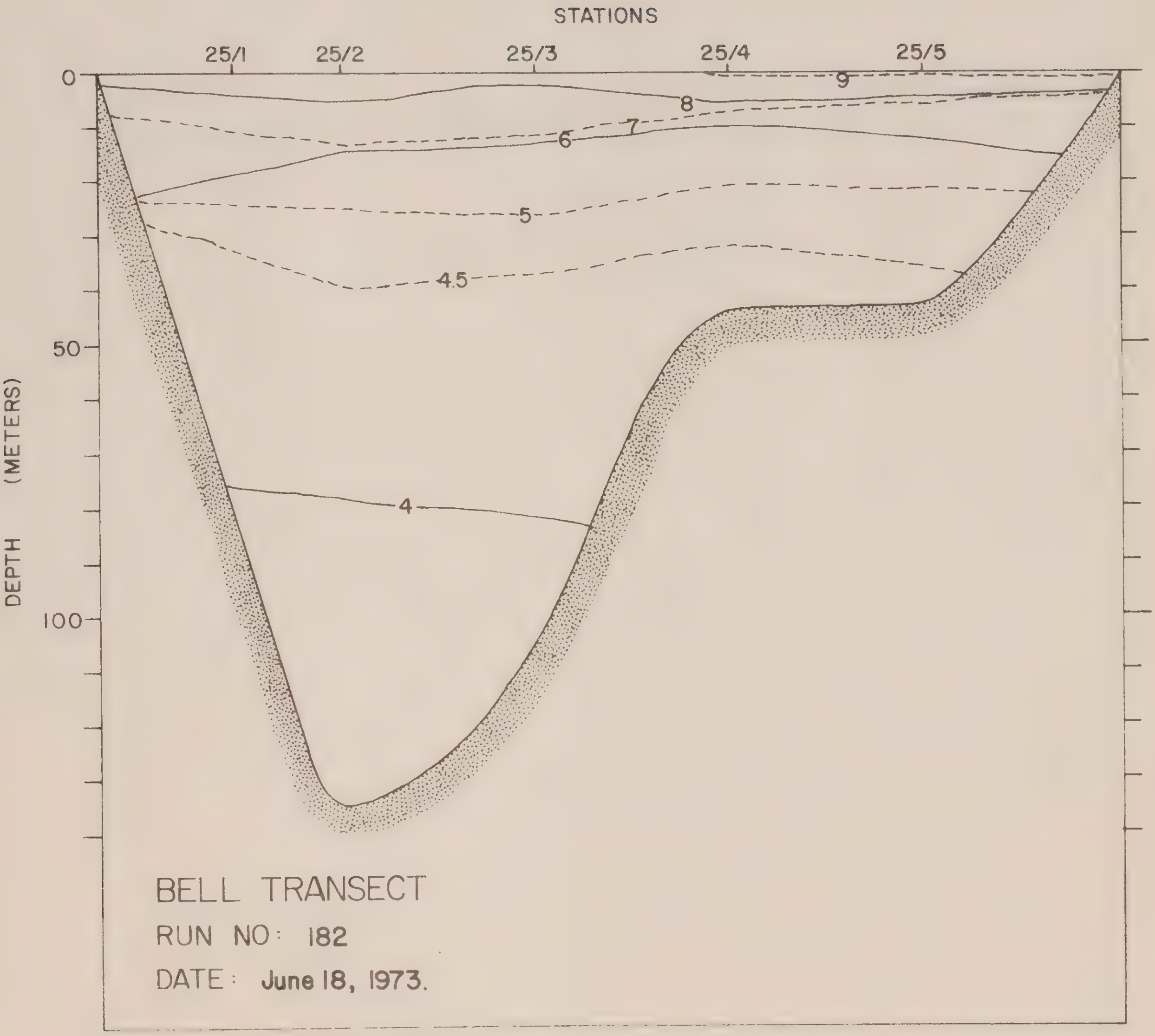

STATIONS
10 12 13 15 17 20 25 30 33 34 40 43 46 50 53 56 60 62 64 66 70
0 2 4 6
DEPTH (METERS)
SECCHI DISC
RUN NO 321
DATE: Oct. 30-31, 1973.

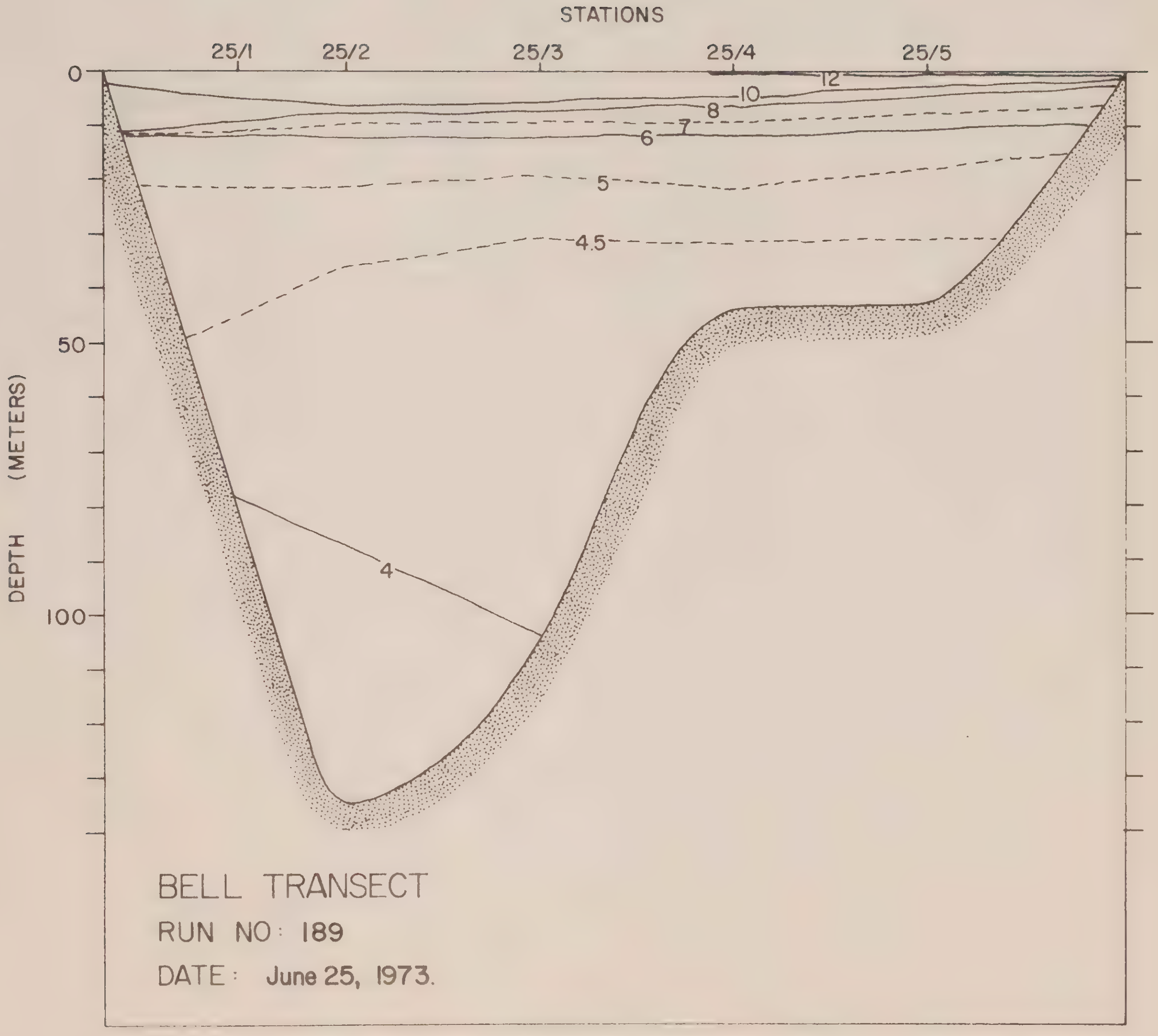
BELL TRANSECT (MAY 28 - OCTOBER 29)

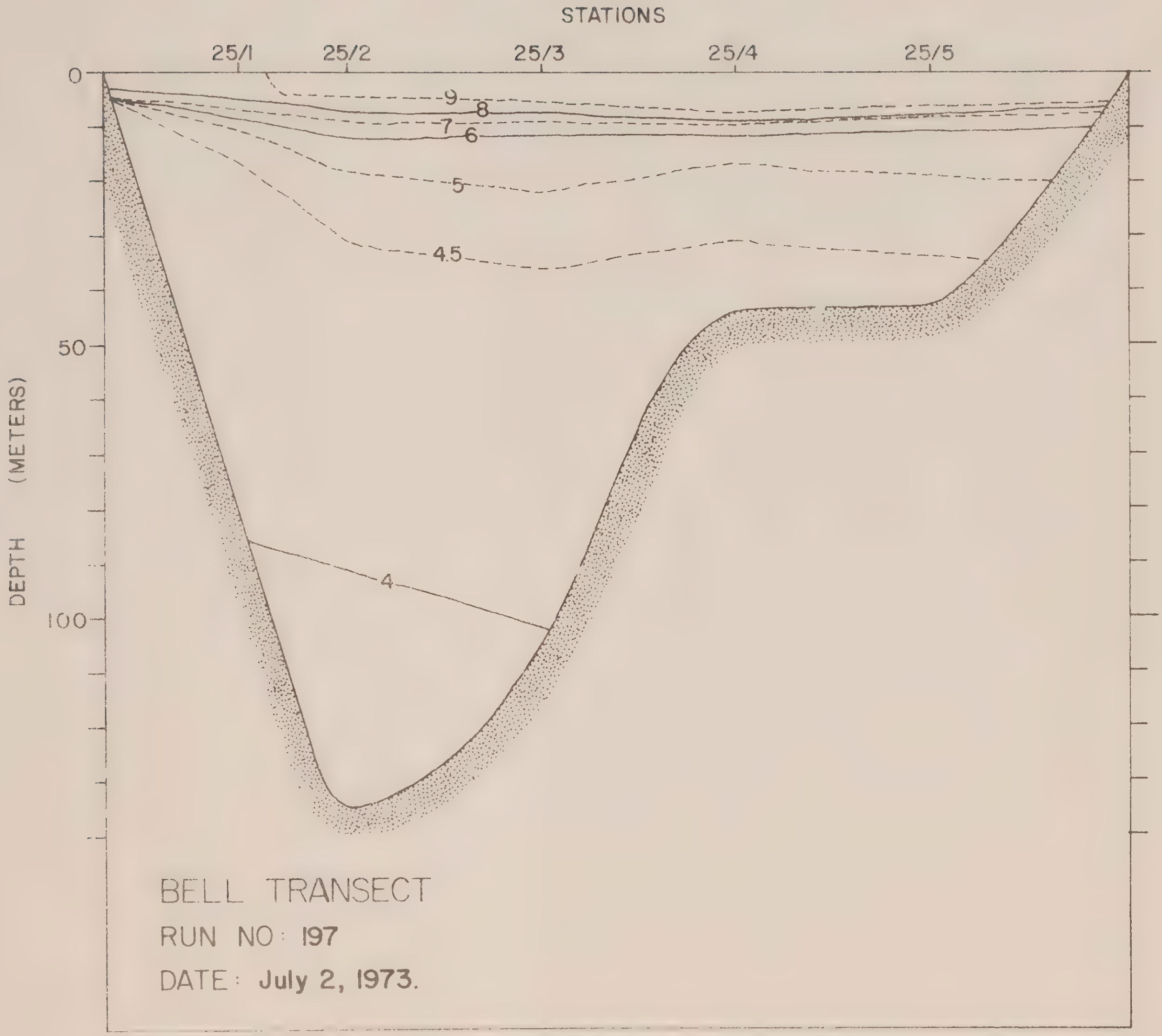

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
5
4.8
4.6
4.4
4.2
4
4.0
4.8
4.6
4.4
4.2
BELL TRANSECT
RUN NO: 160
DATE: May 28, 1973.

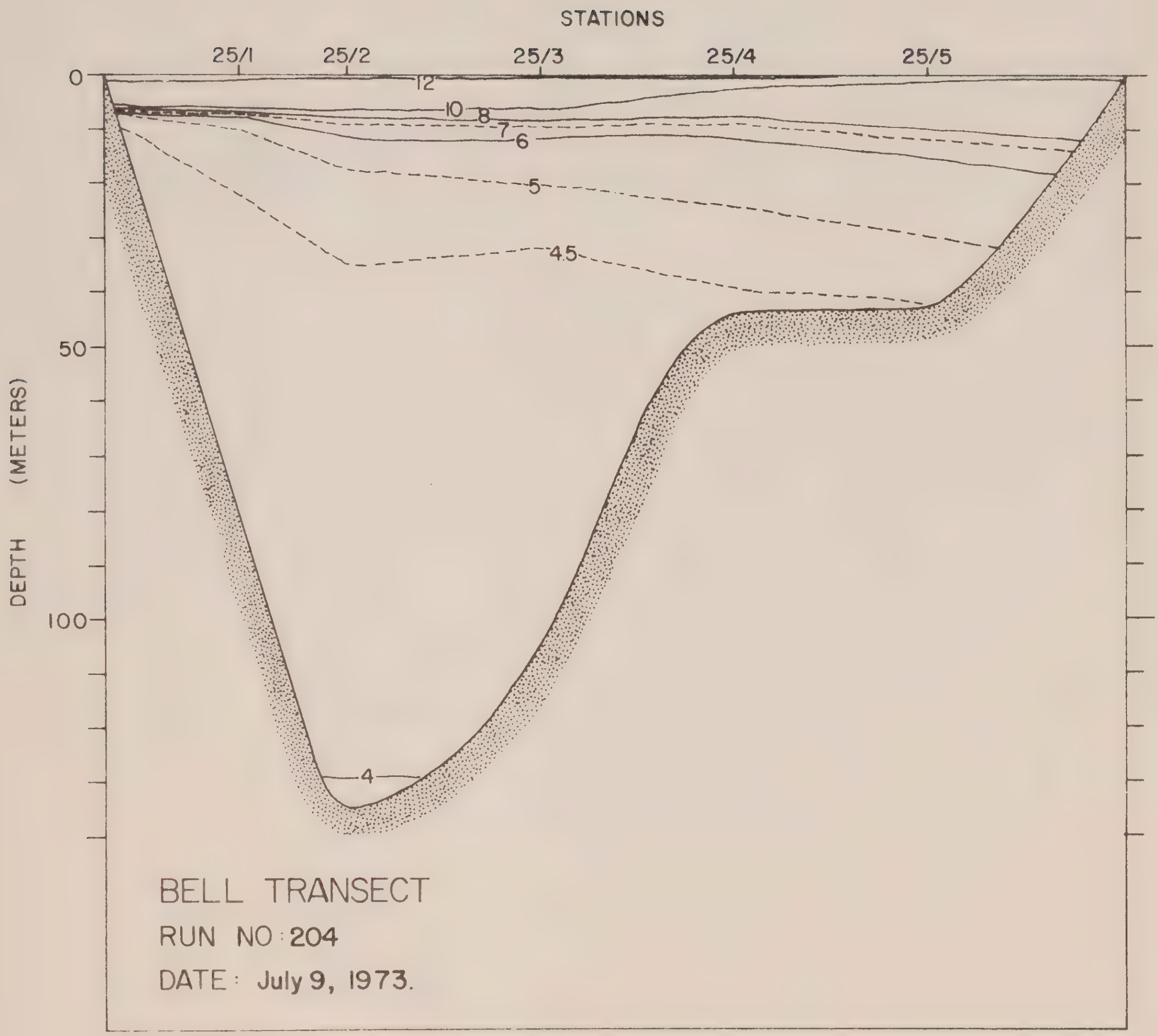

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
5.6
5.4
5.2
5.0
4.8
4.6
4.4
4.2
4.0
52
54
BELL TRANSECT
RUN NO: 167
DATE: June 4, 1973.

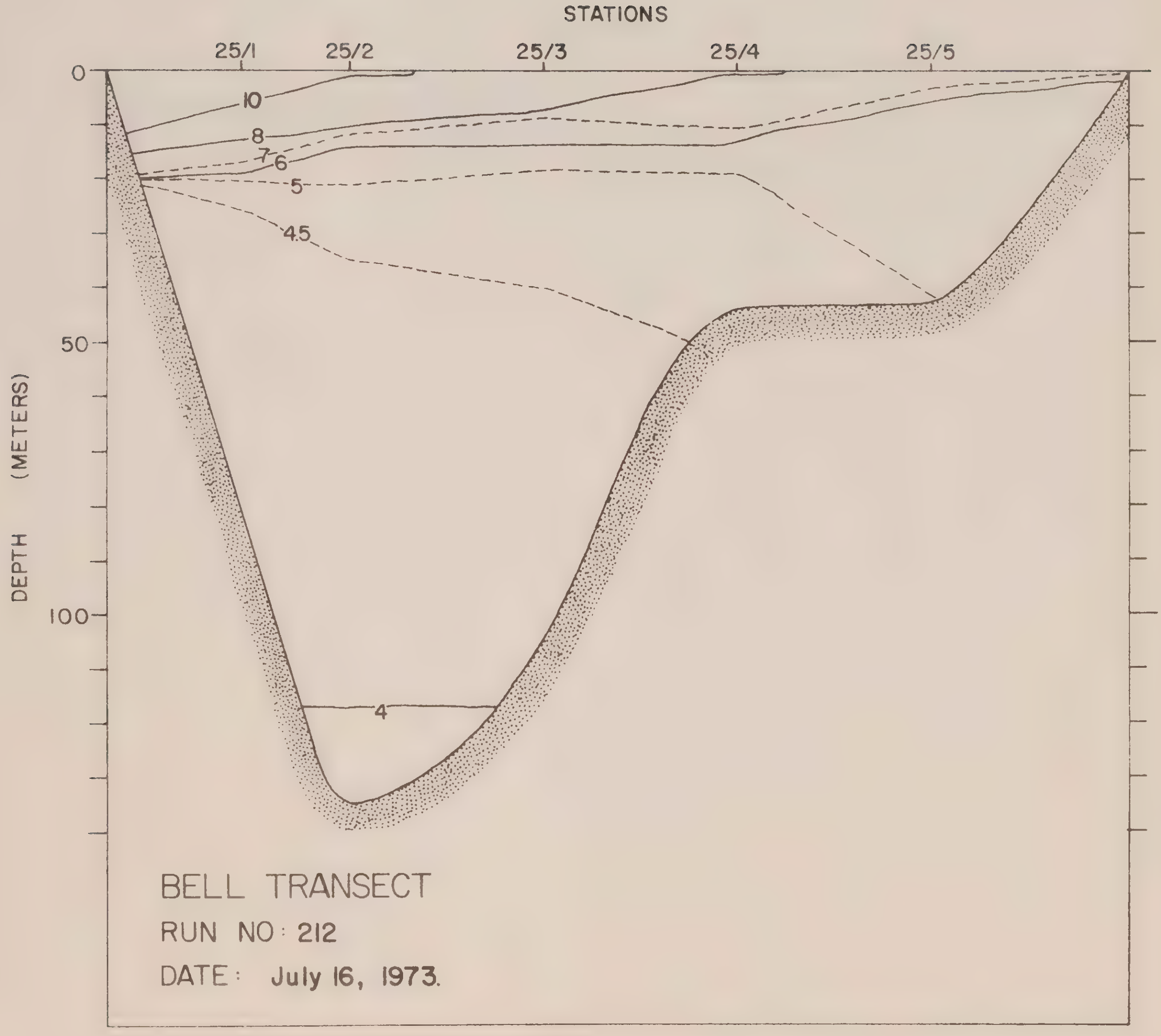

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
6.5
6
5.5
5
4.5
4
BELL TRANSECT
RUN NO: 175
DATE: June 11, 1973.

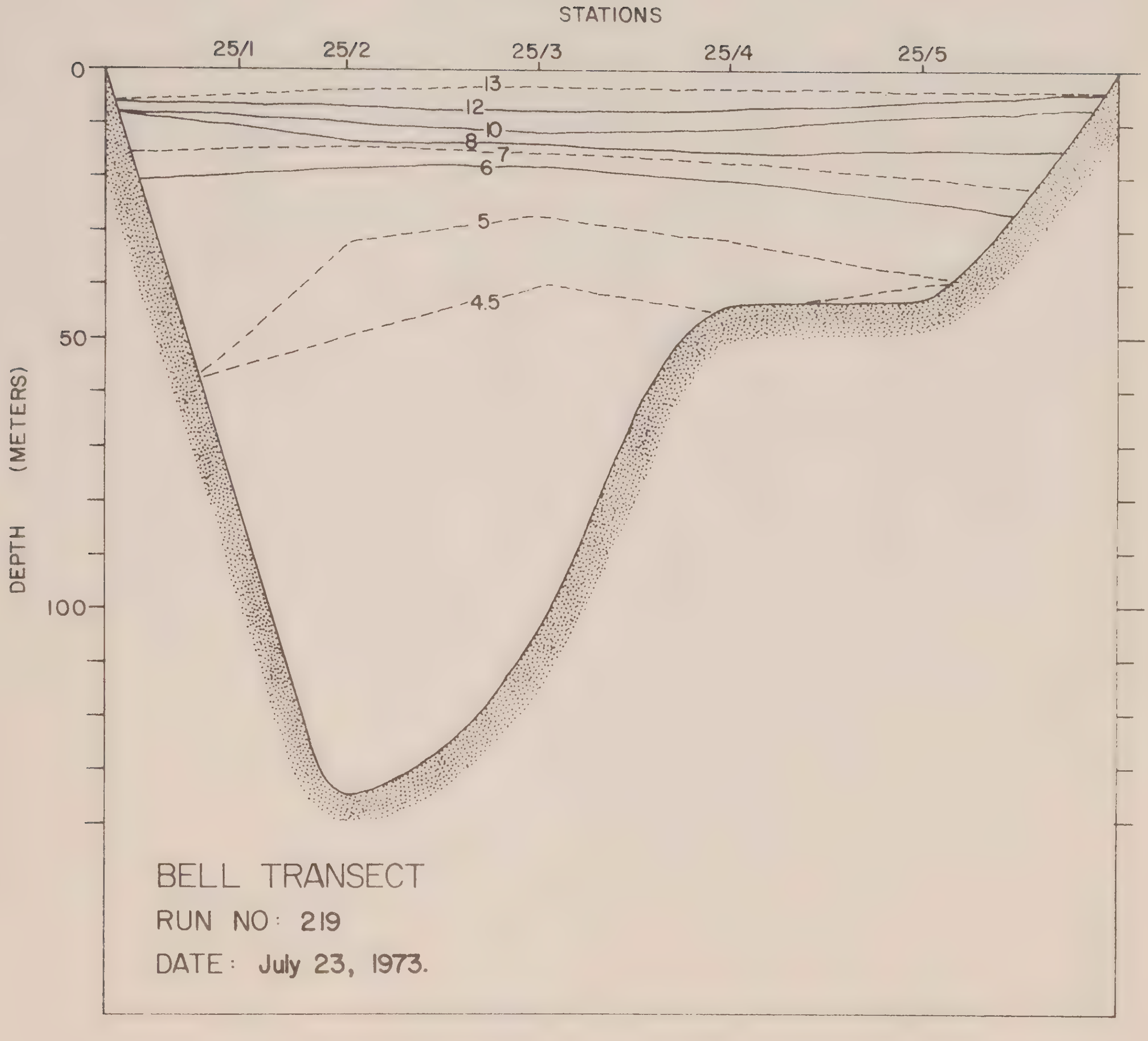

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
9
8
7
6
5
4.5
4
BELL TRANSECT
RUN NO: 182
DATE: June 18, 1973.


STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
12
10
8
7
6
5
4.5
4
BELL TRANSECT
RUN NO: 189
DATE: June 25, 1973.

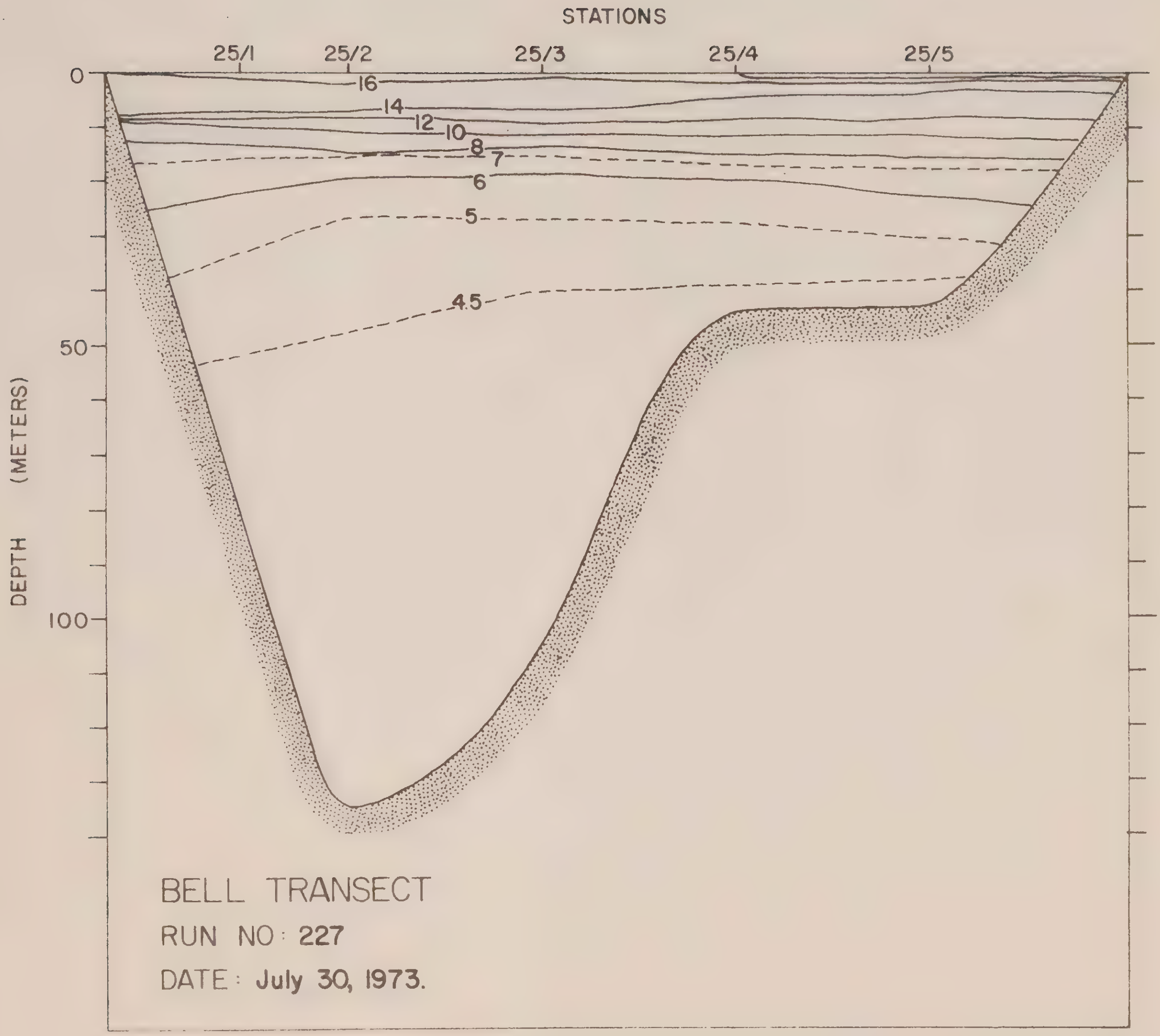

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
9
8
7
6
5
4.5
4
BELL TRANSECT
RUN NO: 197
DATE: July 2, 1973.

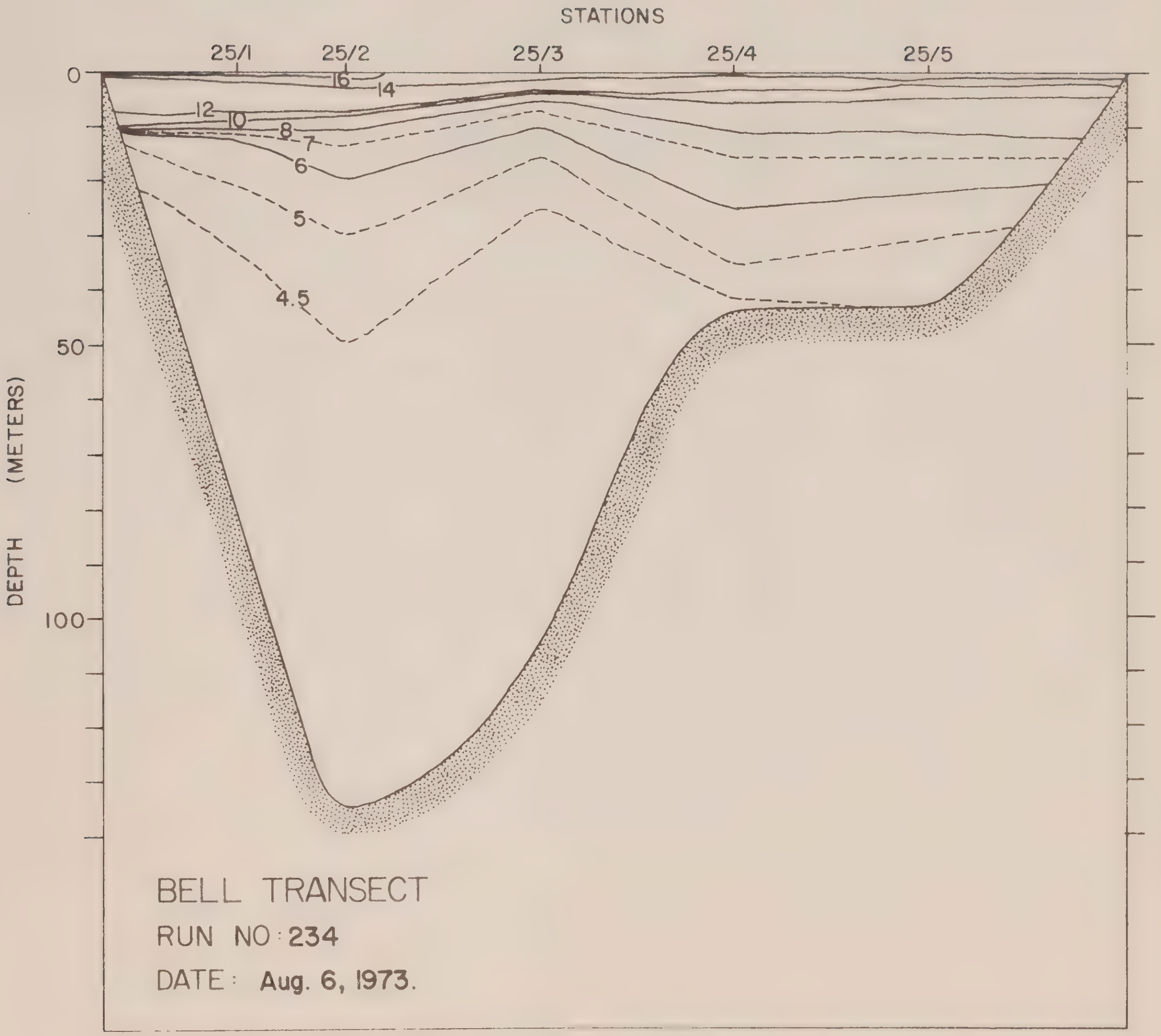

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
12
10
8
7
6
5
4.5
4
BELL TRANSECT
RUN NO: 204
DATE: July 9, 1973.


STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
10
8
7
6
5
4.5
4
BELL TRANSECT
RUN NO: 212
DATE: July 16, 1973.

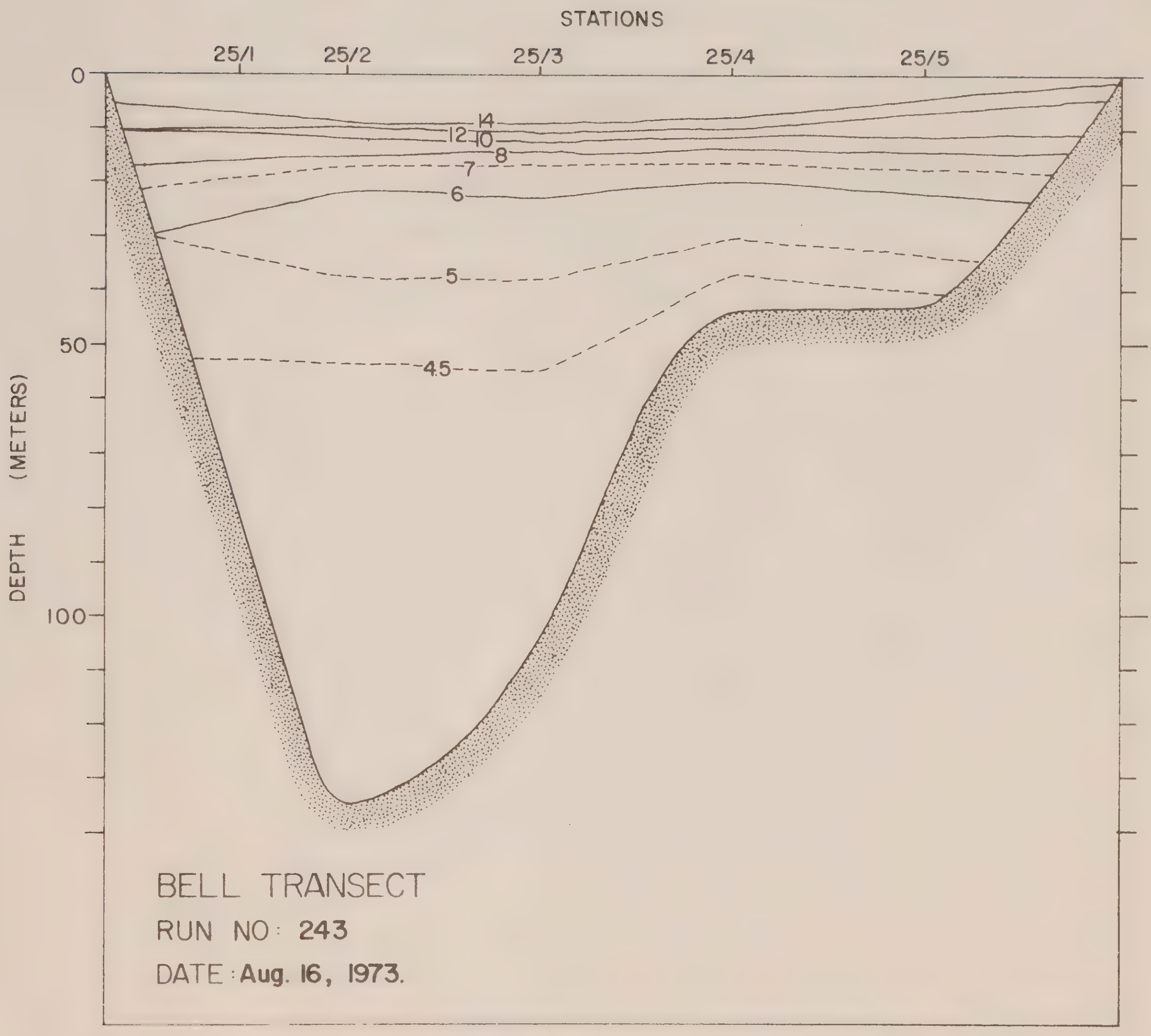


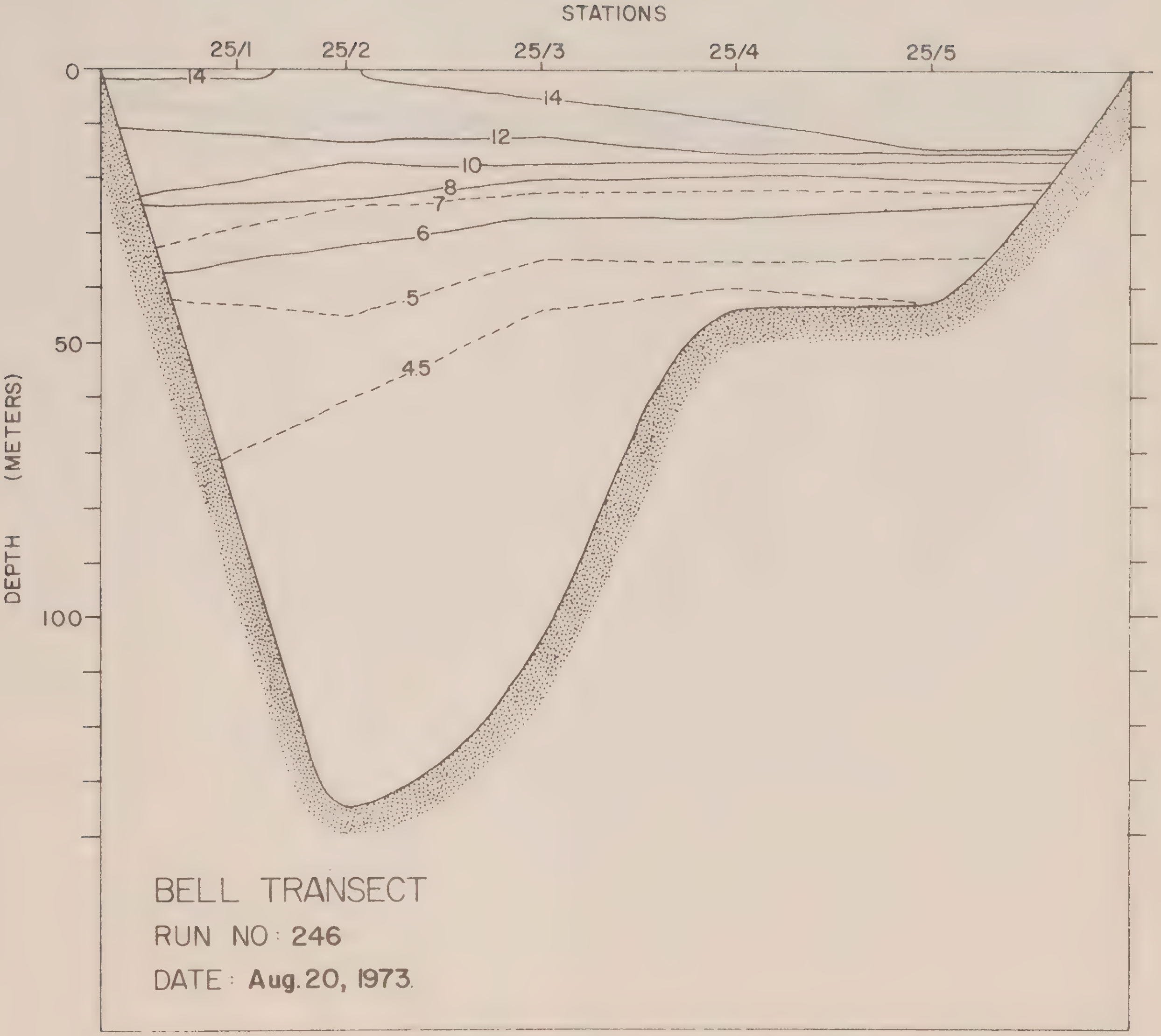
STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
13
12
10
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 219
DATE: July 23, 1973.

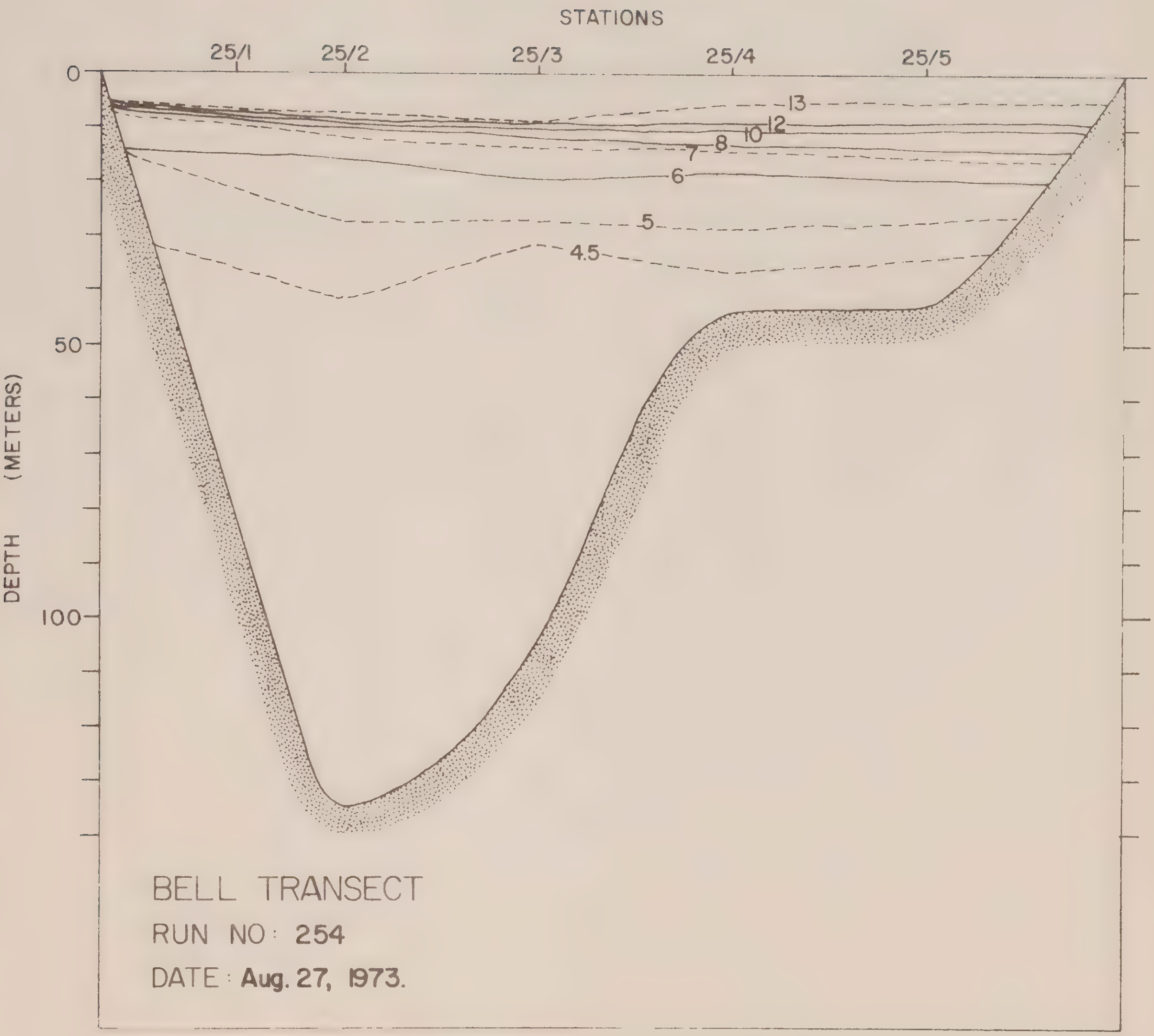

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
16
14
12
10
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 227
DATE: July 30, 1973.

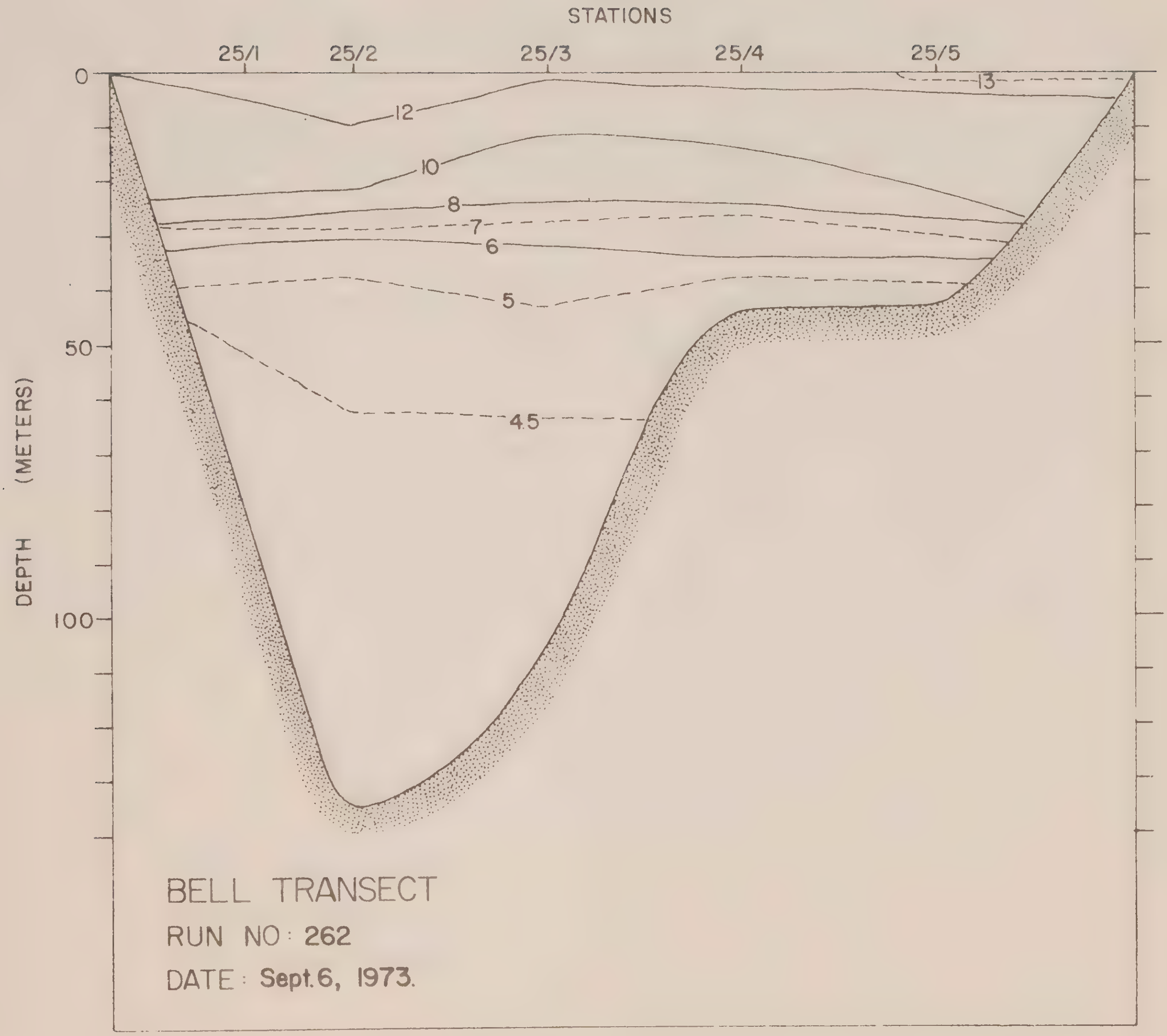


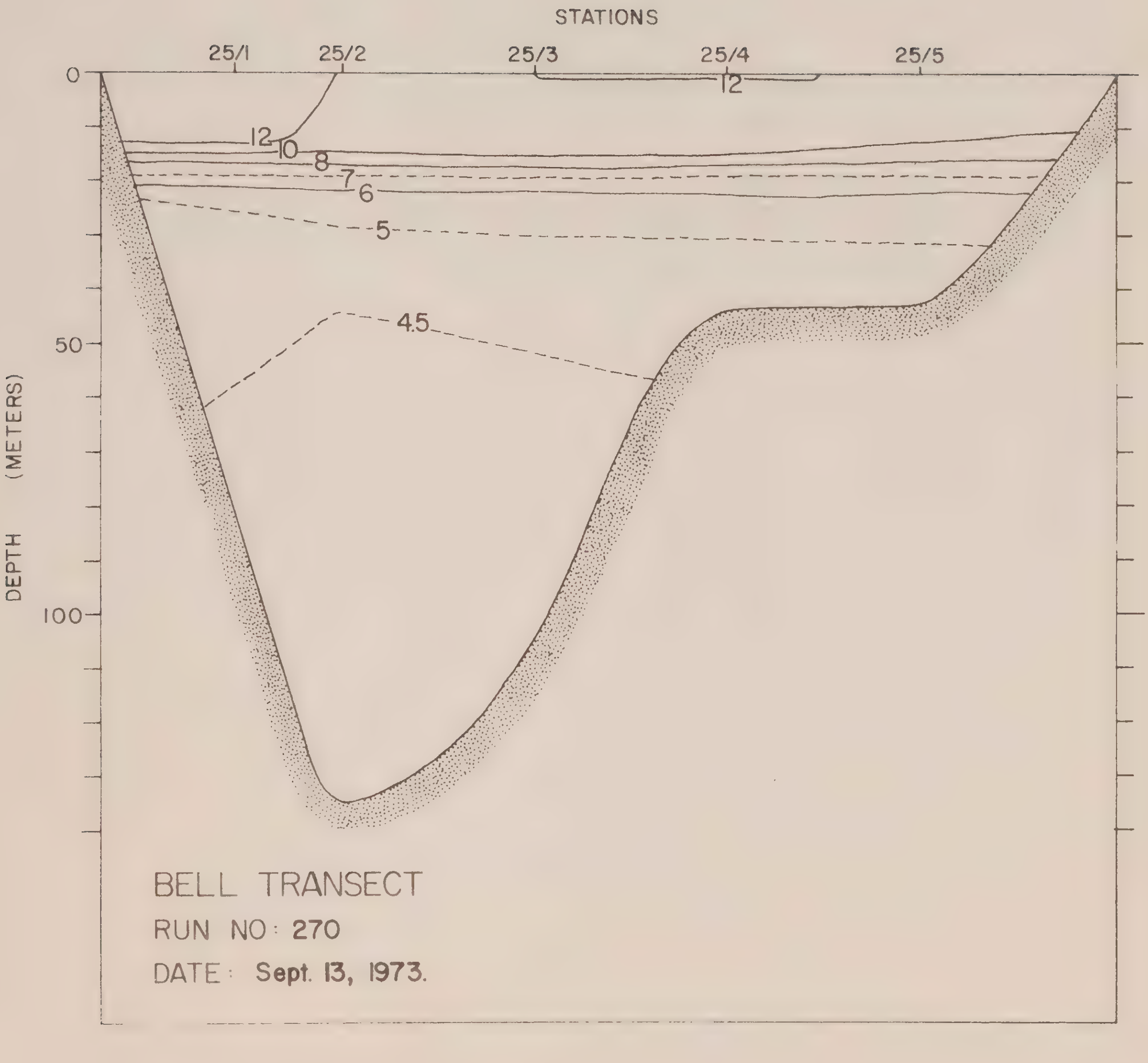
STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
16
14
12
10
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 234
DATE: Aug. 6, 1973.

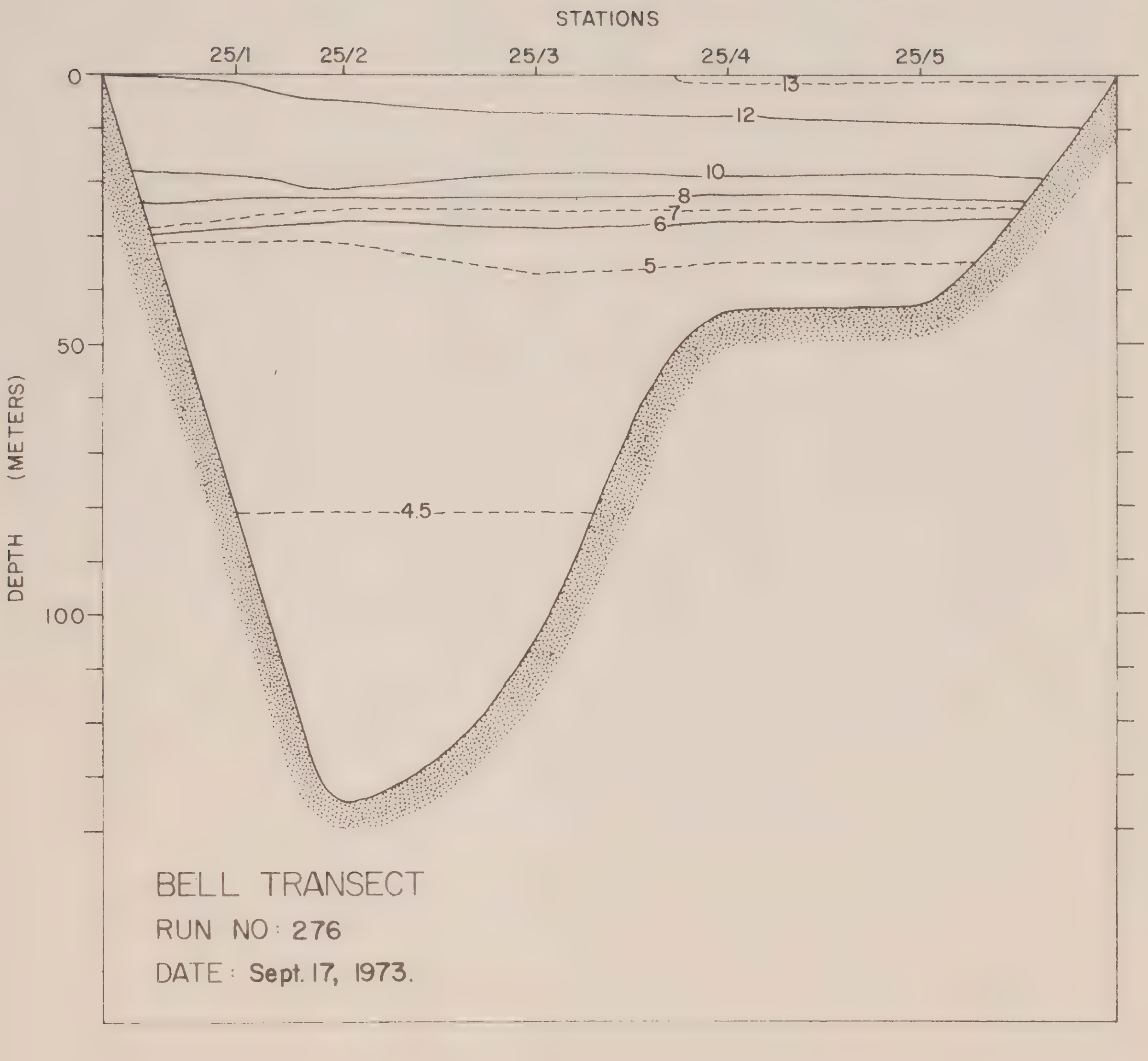

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
14
12
10
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 243
DATE: Aug. 16, 1973.

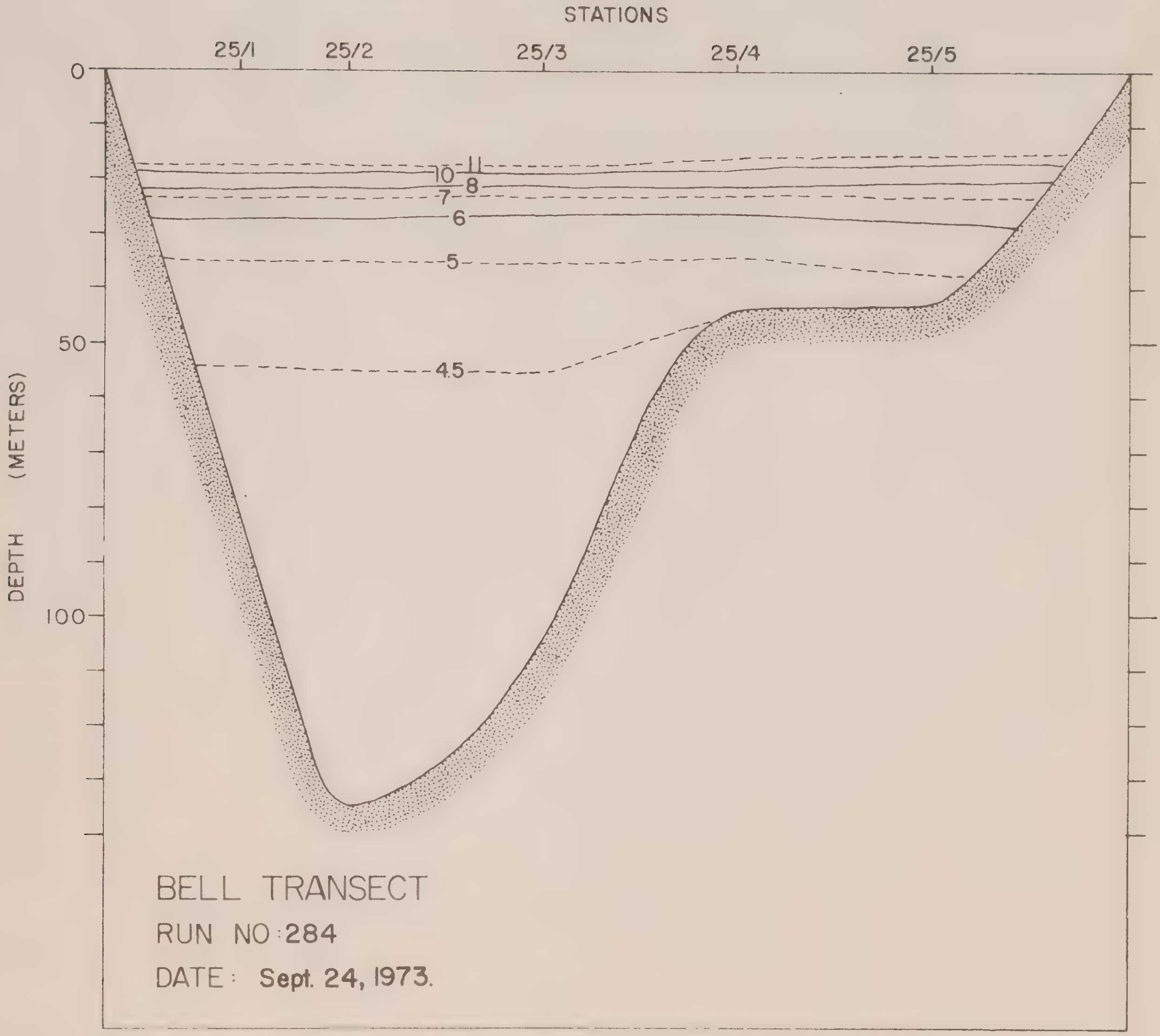

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
14
14
12
10
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 246
DATE: Aug. 20, 1973.

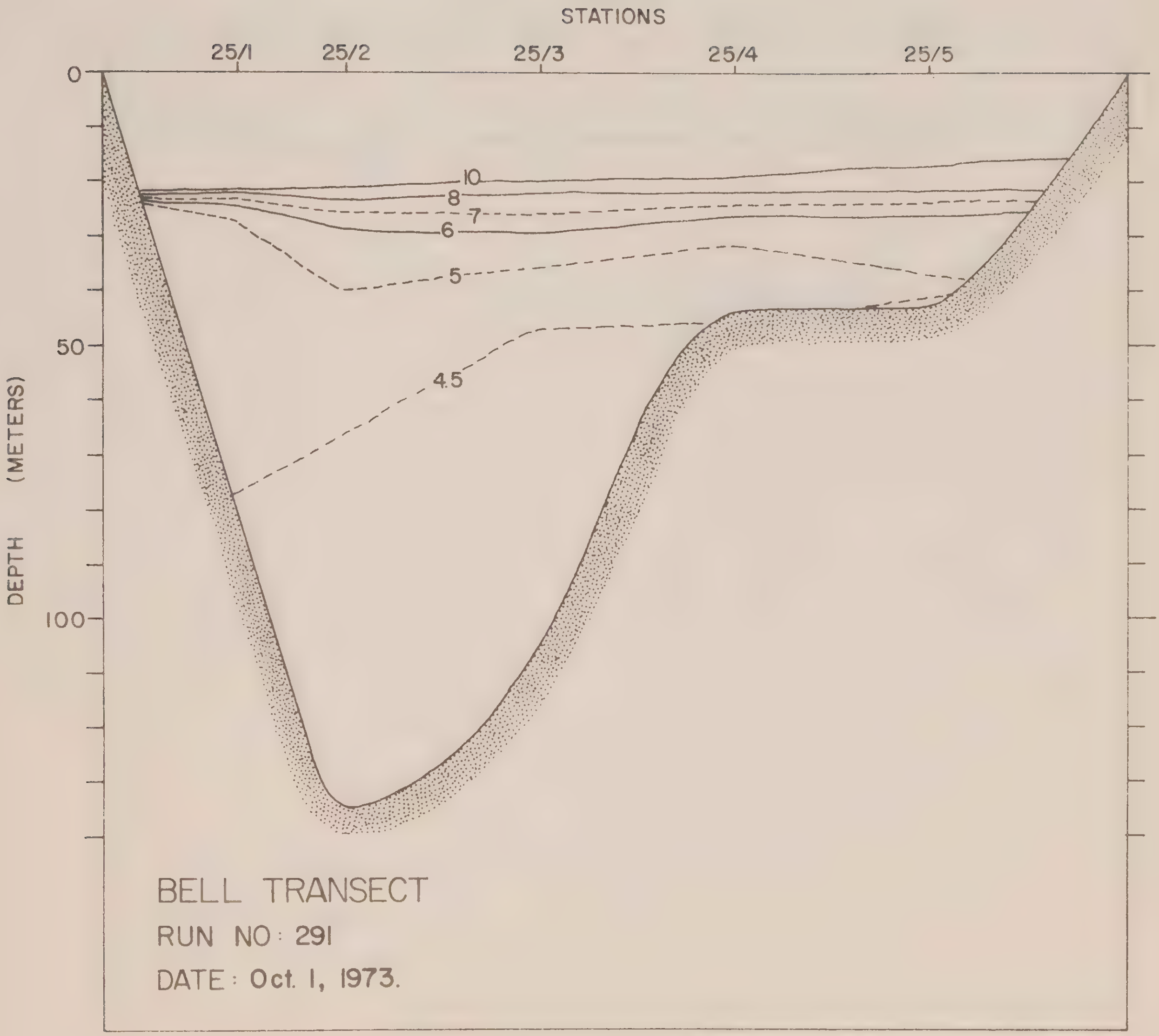

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
13
12
10
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 254
DATE: Aug. 27, 1973.

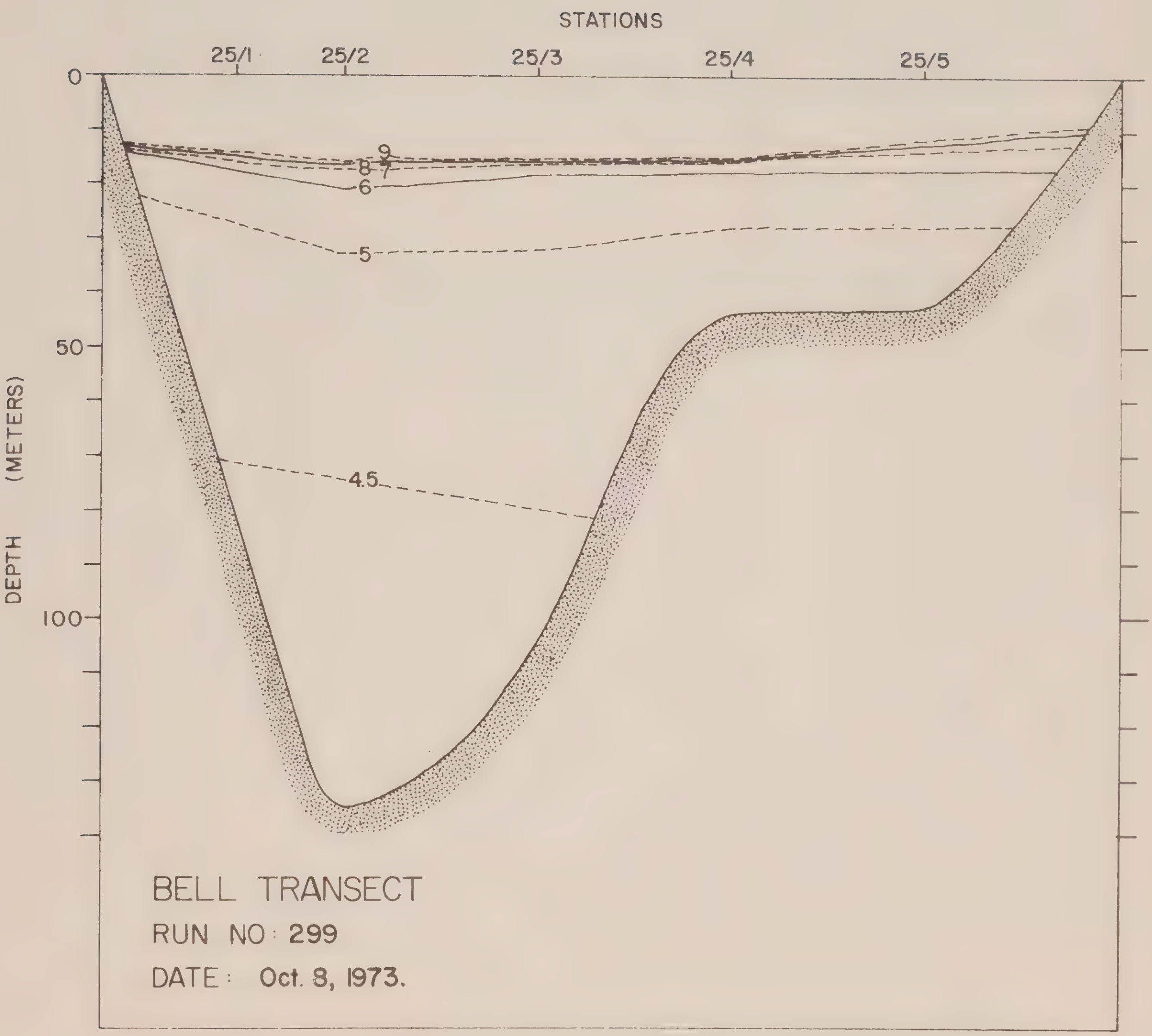

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
13
12
10
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 262
DATE: Sept. 6, 1973.

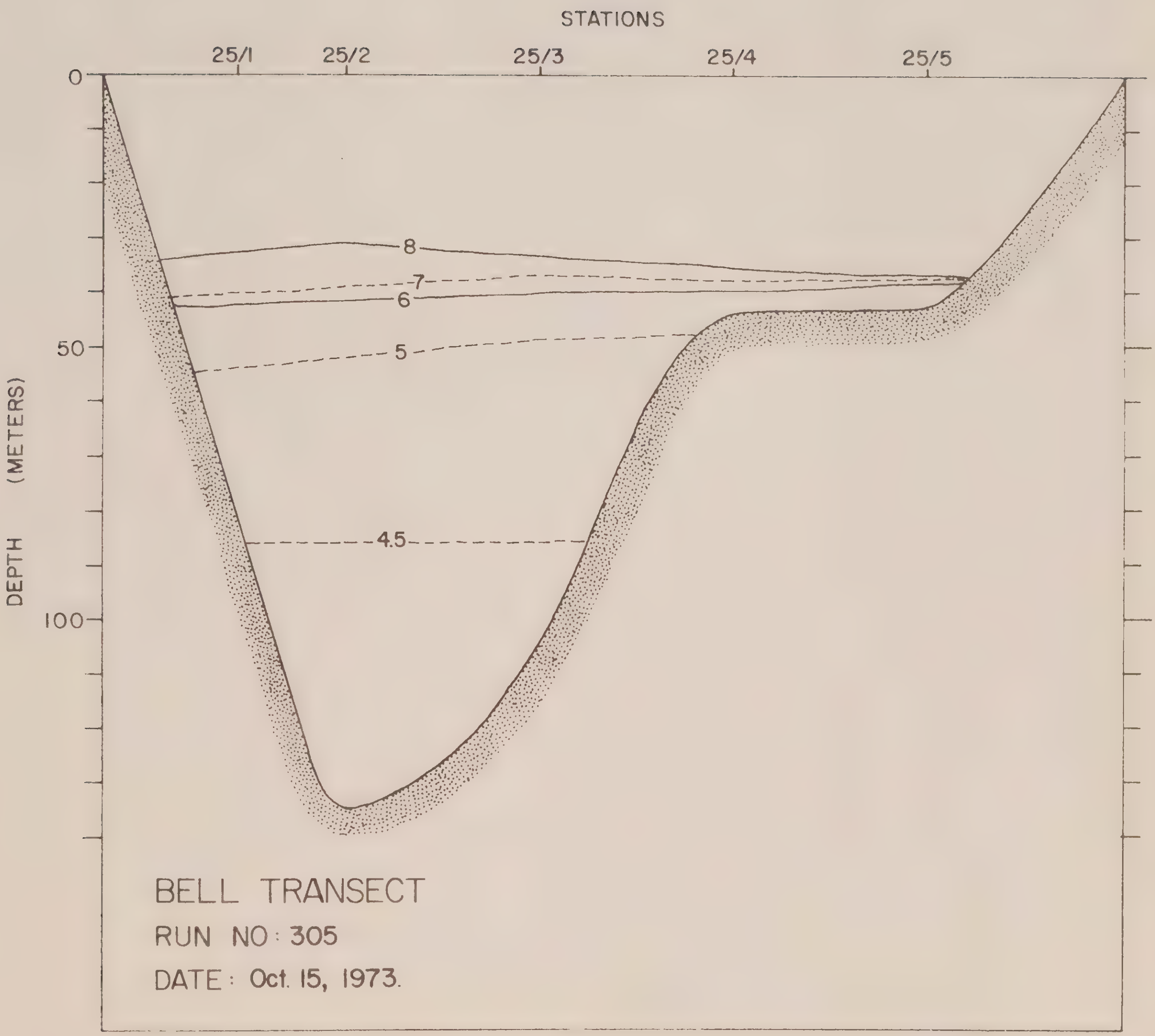

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
12
12
10
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 270
DATE: Sept. 13, 1973.

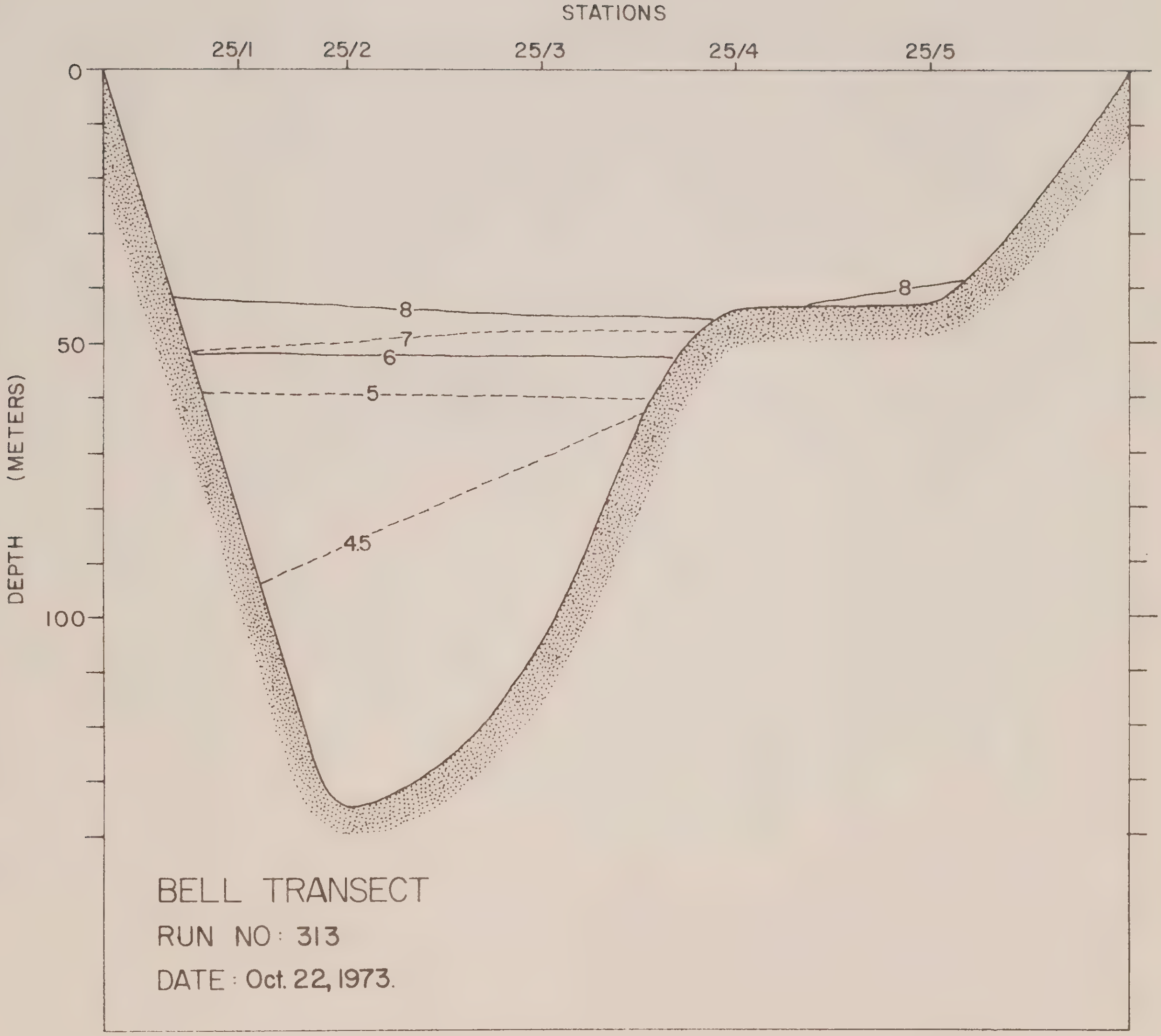

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
13
12
10
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 276
DATE: Sept. 17, 1973.

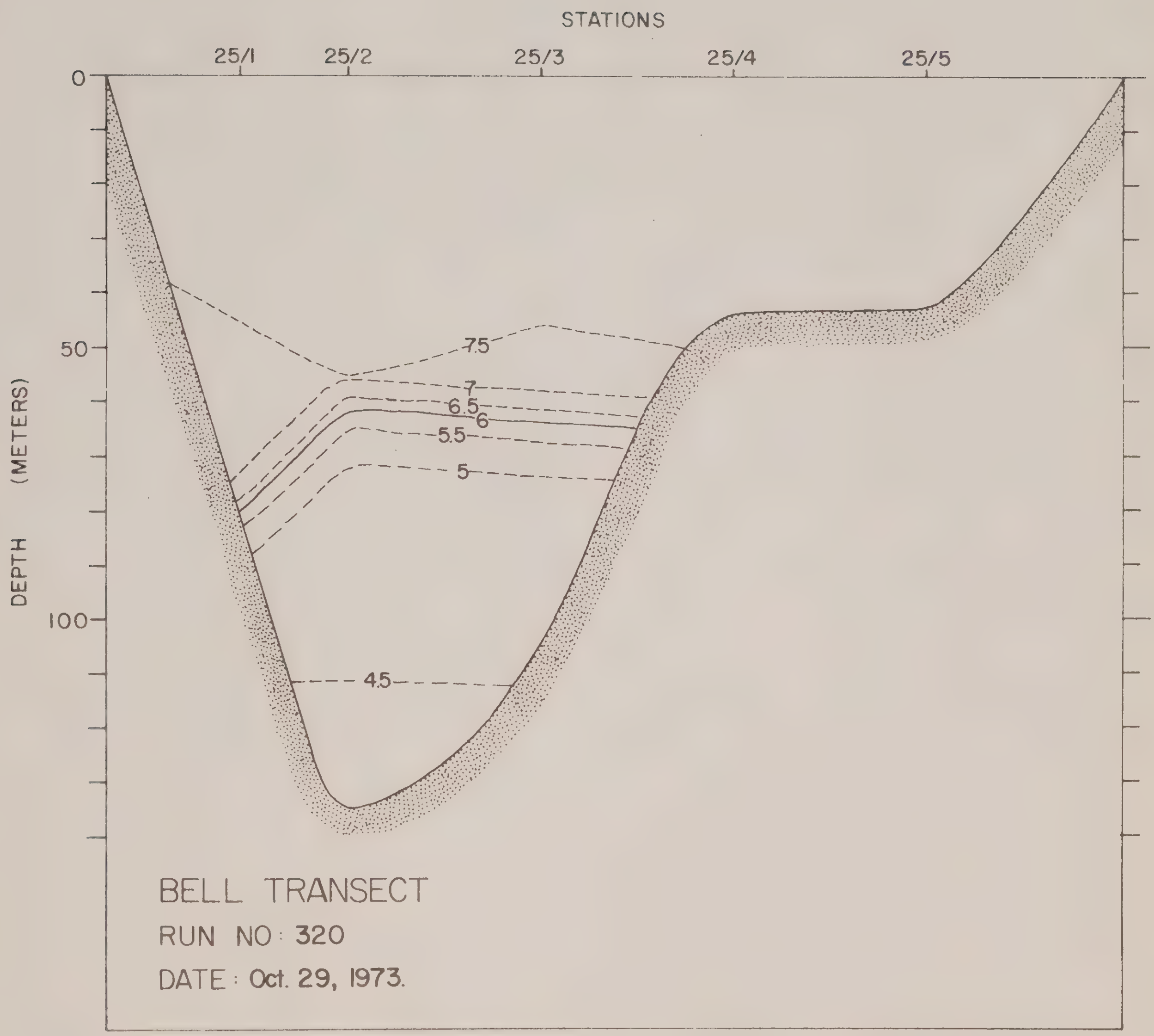

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
11
10
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 284
DATE: Sept. 24, 1973.


STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
10
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 291
DATE: Oct. 1, 1973.


STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
9
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 299
DATE: Oct. 8, 1973.

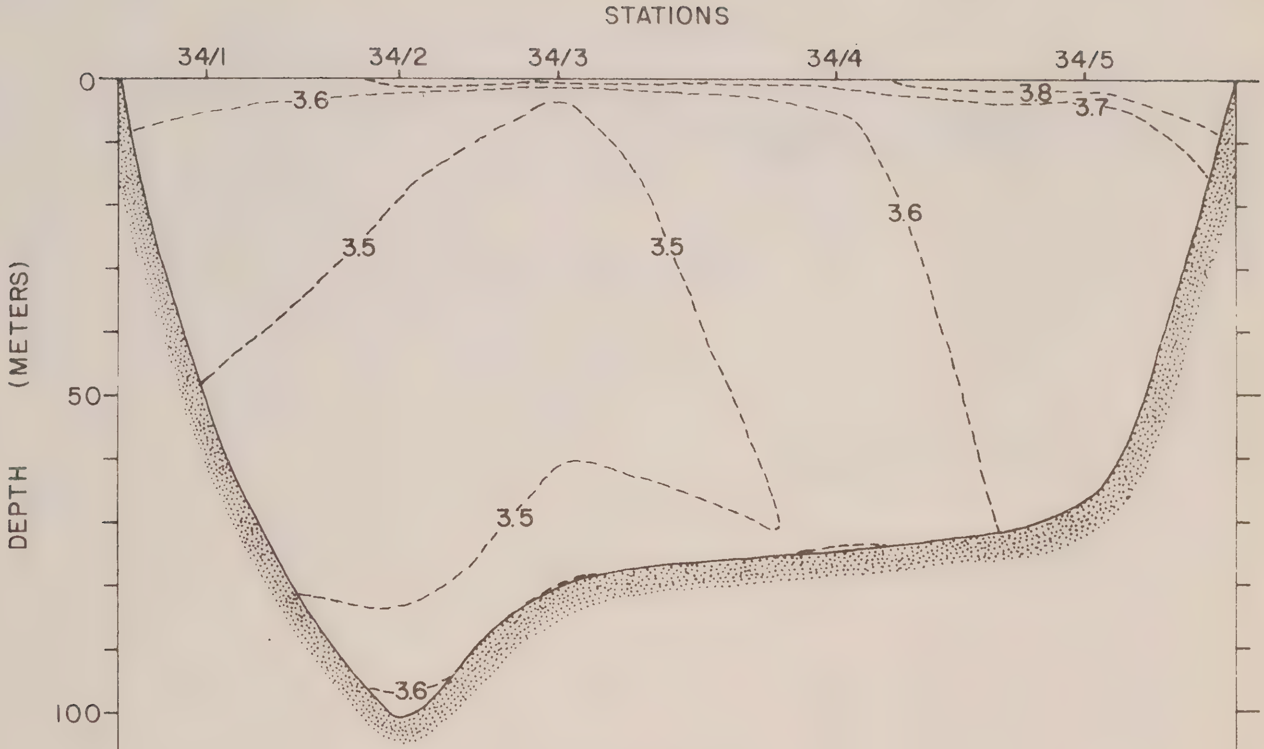

STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
8
7
6
5
4.5
BELL TRANSECT
RUN NO: 305
DATE: Oct. 15, 1973.


STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
8
7
6
5
4.5
8
BELL TRANSECT
RUN NO: 313
DATE: Oct. 22, 1973.



STATIONS
25/1
25/2
25/3
25/4
25/5
0
50
100
DEPTH (METERS)
7.5
7
6.5
6
5.5
5
4.5
BELL TRANSECT
RUN NO: 320
DATE: Oct. 29, 1973.

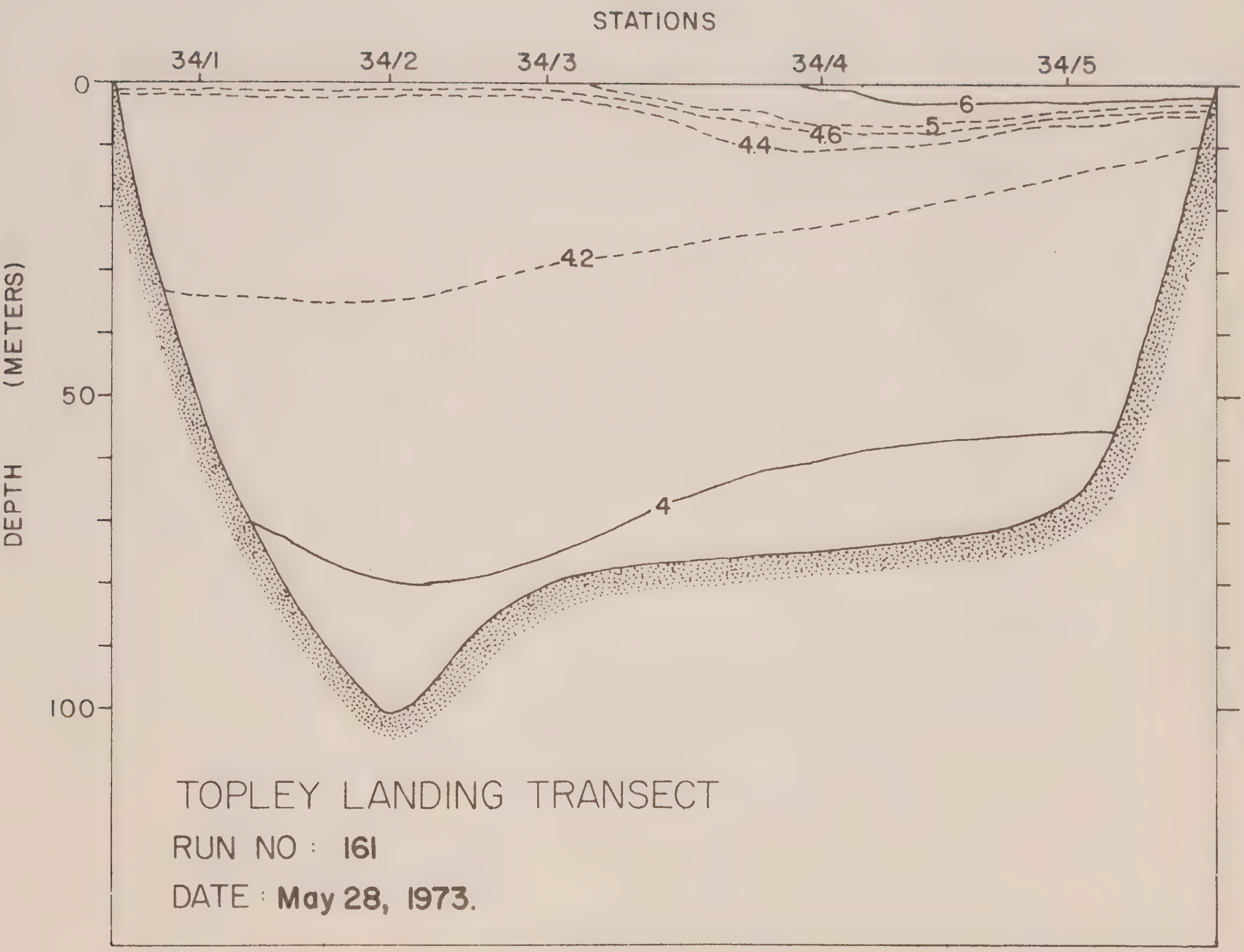
TOPLEY LANDING TRANSECT (MAY 16 - NOVEMBER 1)

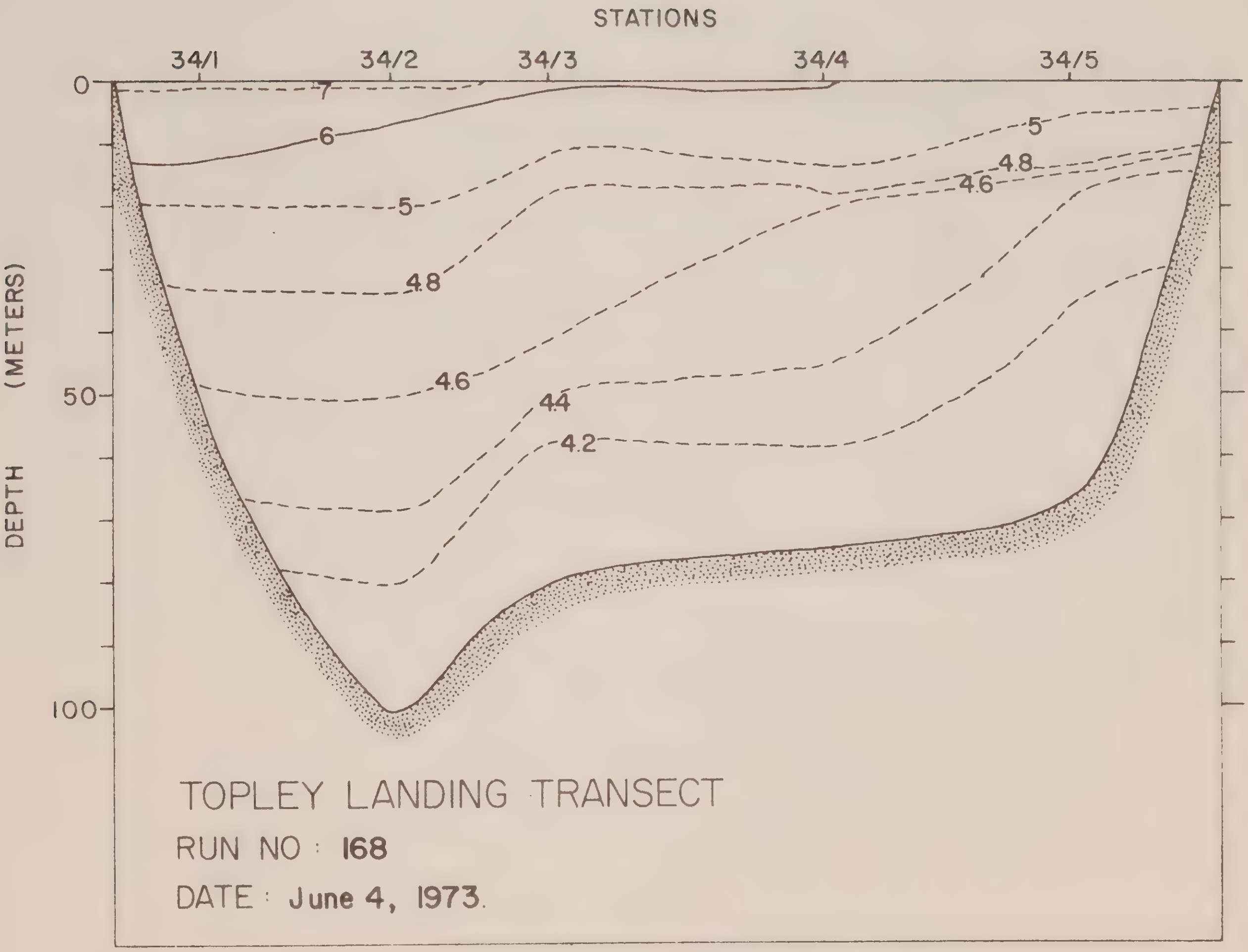


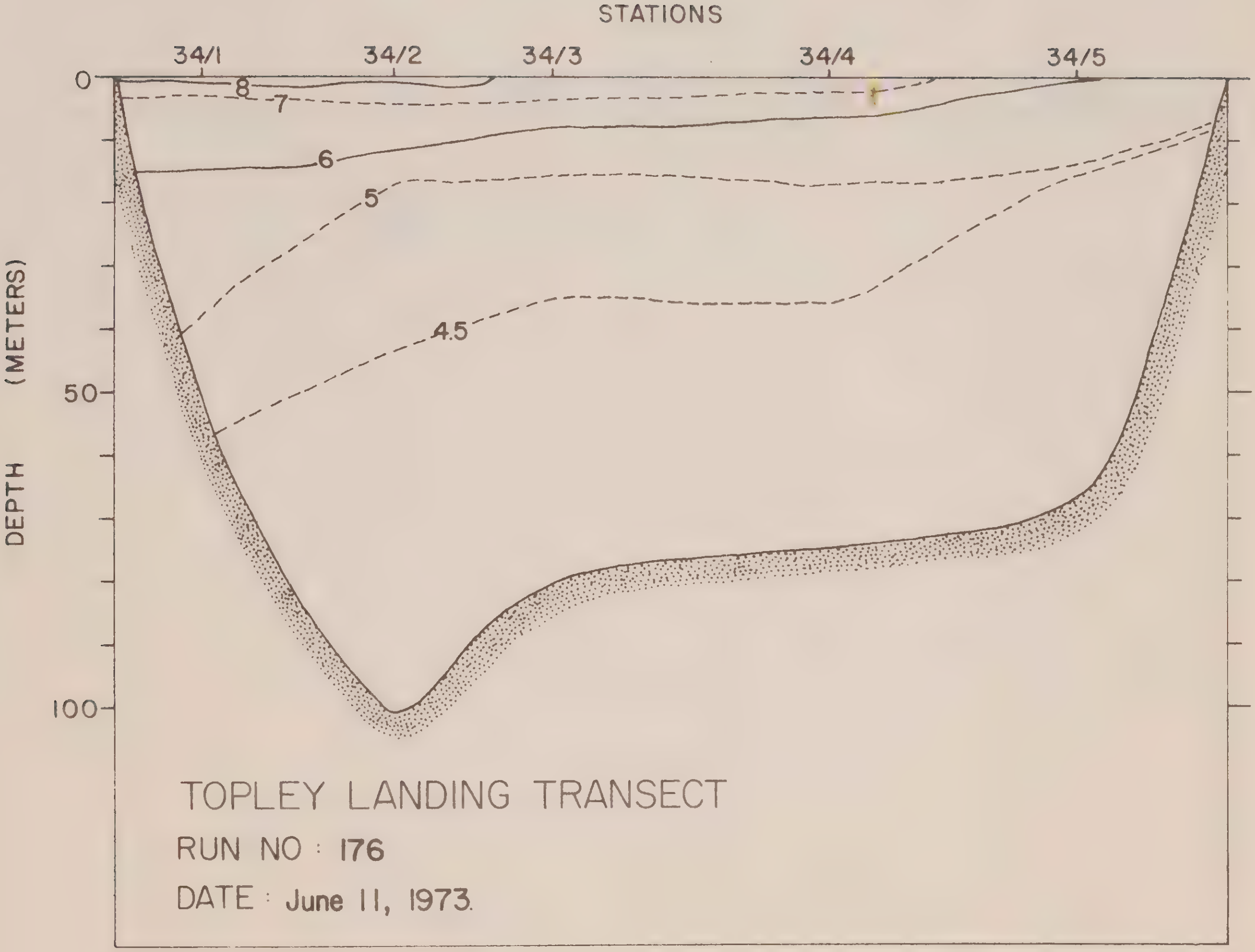
TOPLEY LANDING TRANSECT

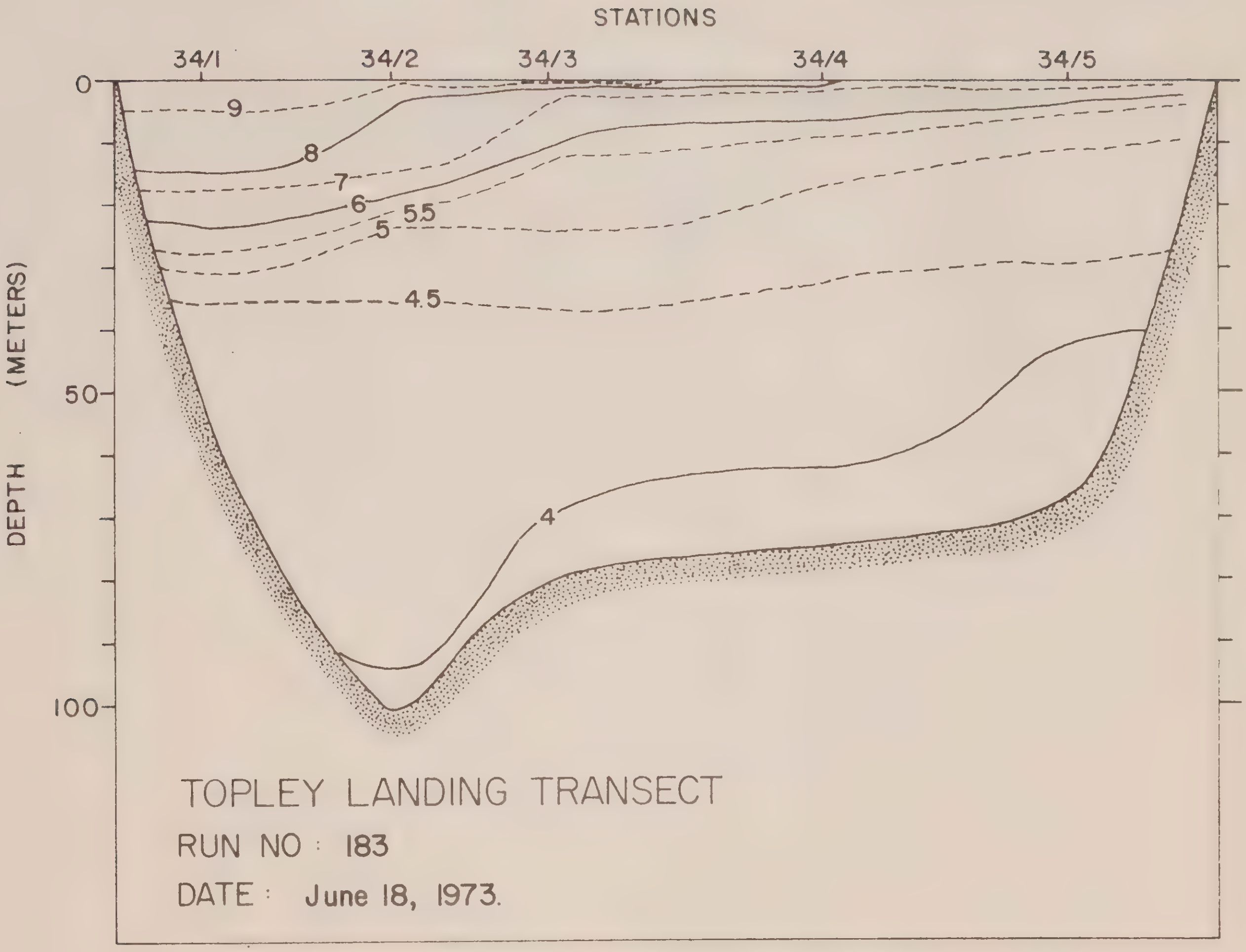
RUN NO : 156 a

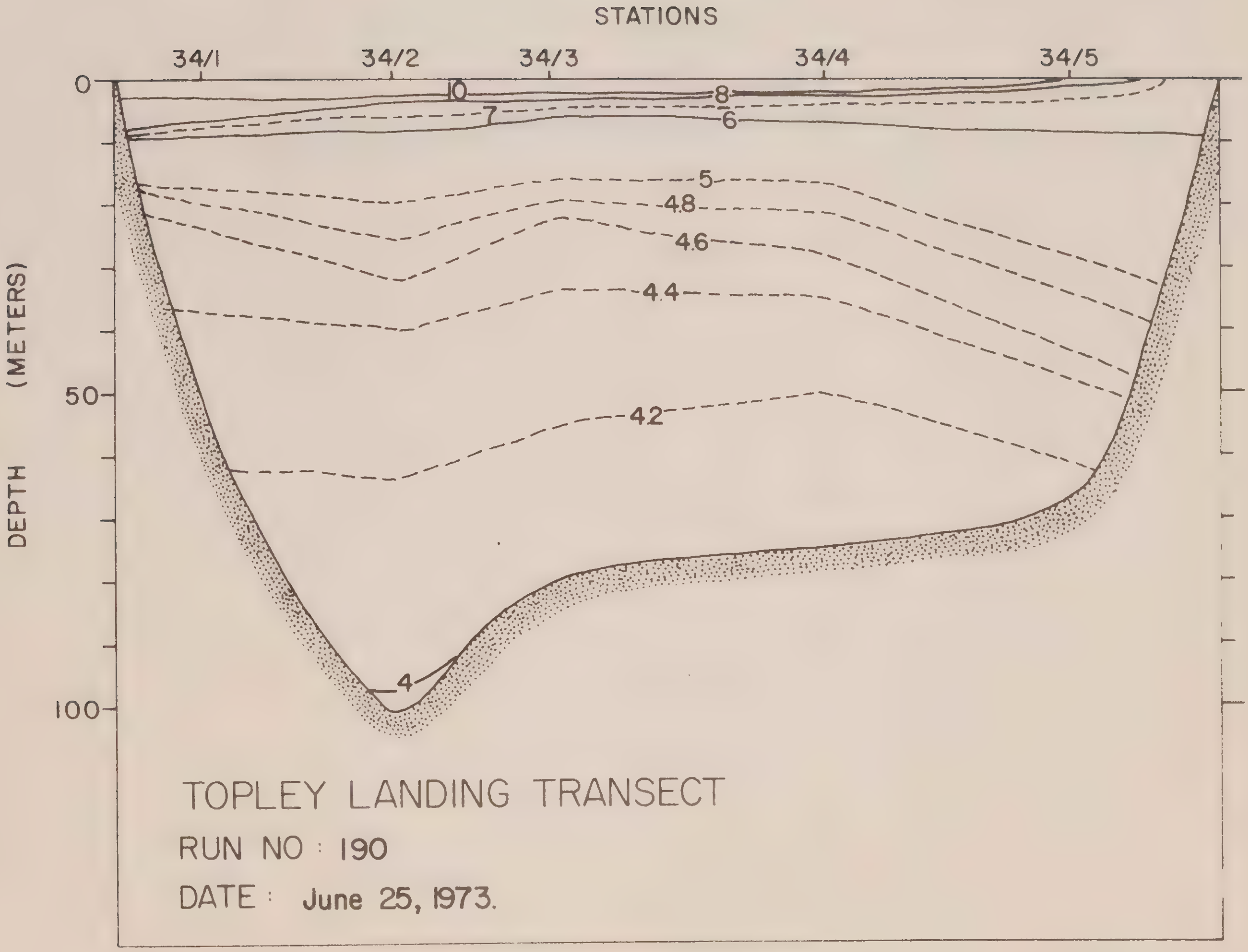
DATE : May 16, 1973.

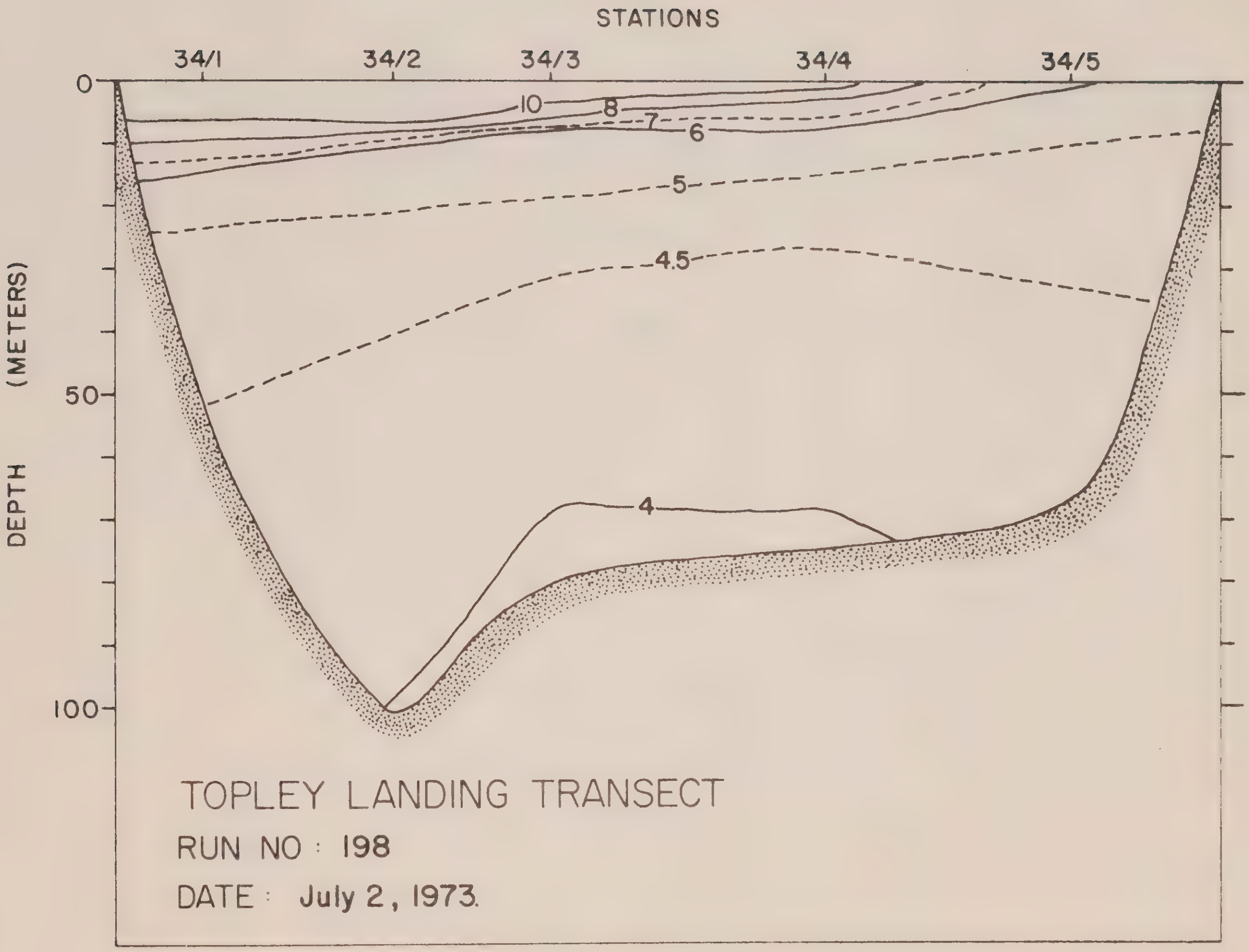

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
6
5
4.6
4.4
4.2
4
TOPLEY LANDING TRANSECT
RUN NO : 161
DATE : May 28, 1973.

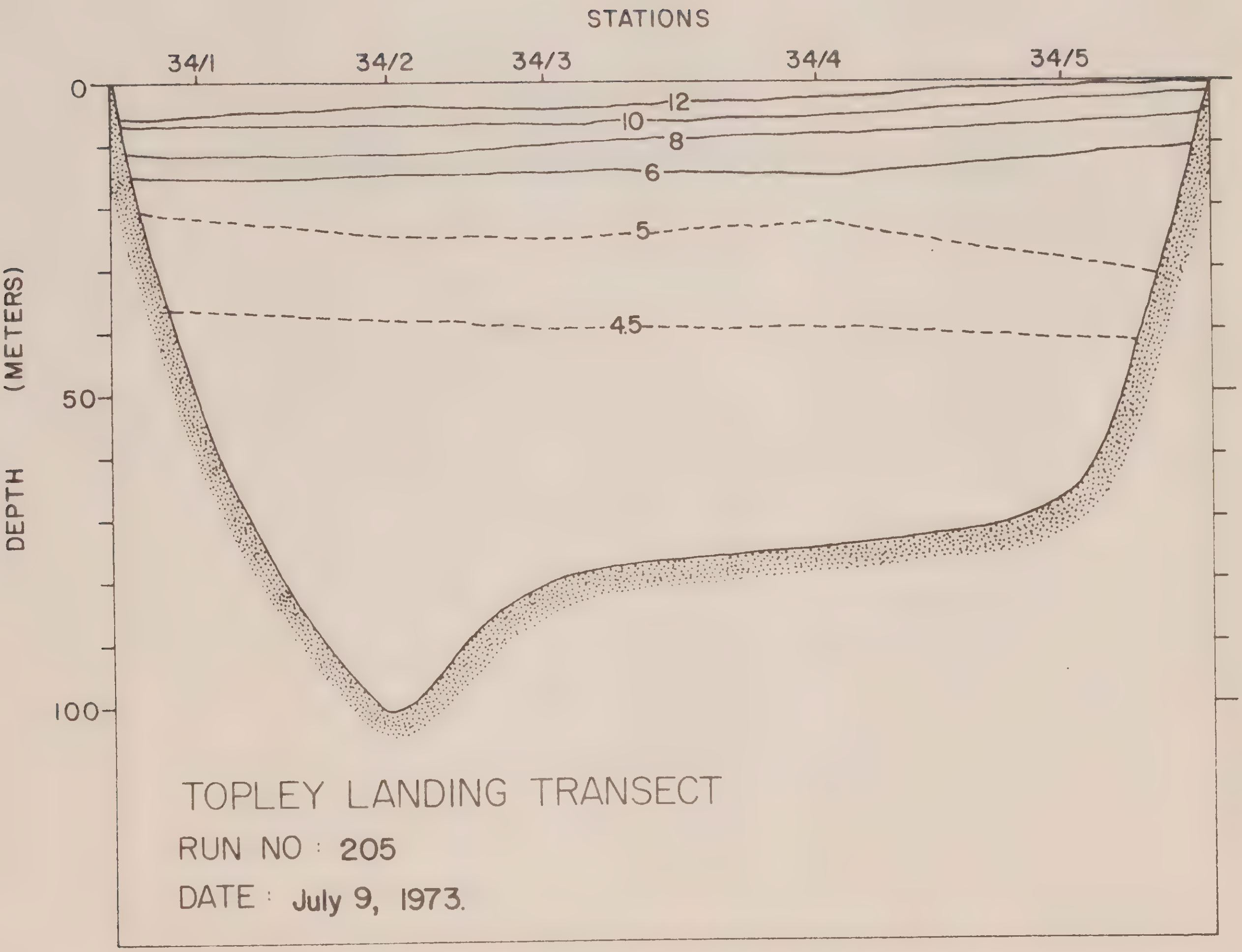

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
7
6
5
4.8
4.6
4.4
4.2
5
4.8
4.6
TOPLEY LANDING TRANSECT
RUN NO : 168
DATE : June 4, 1973.

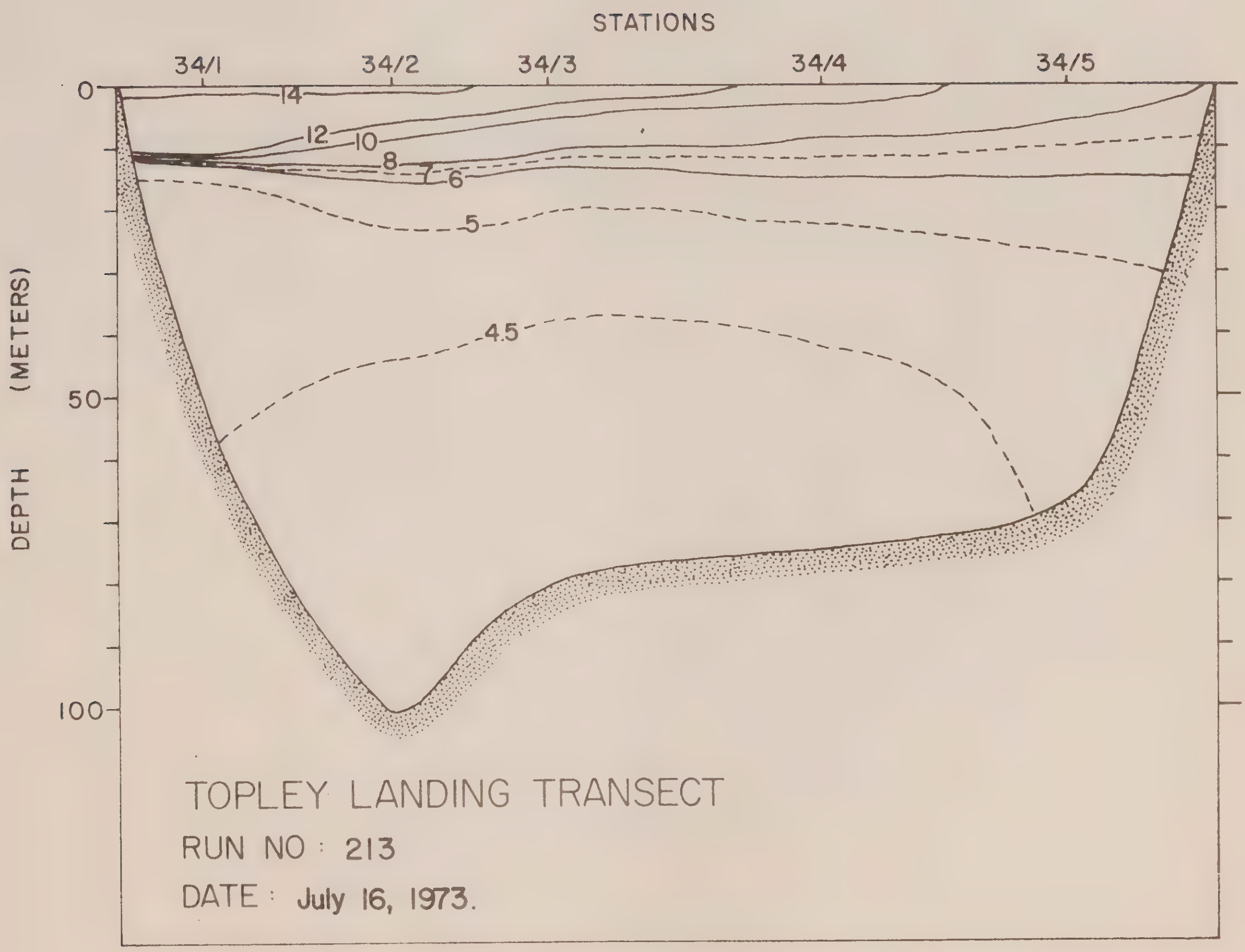

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
8
7
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 176
DATE : June 11, 1973.

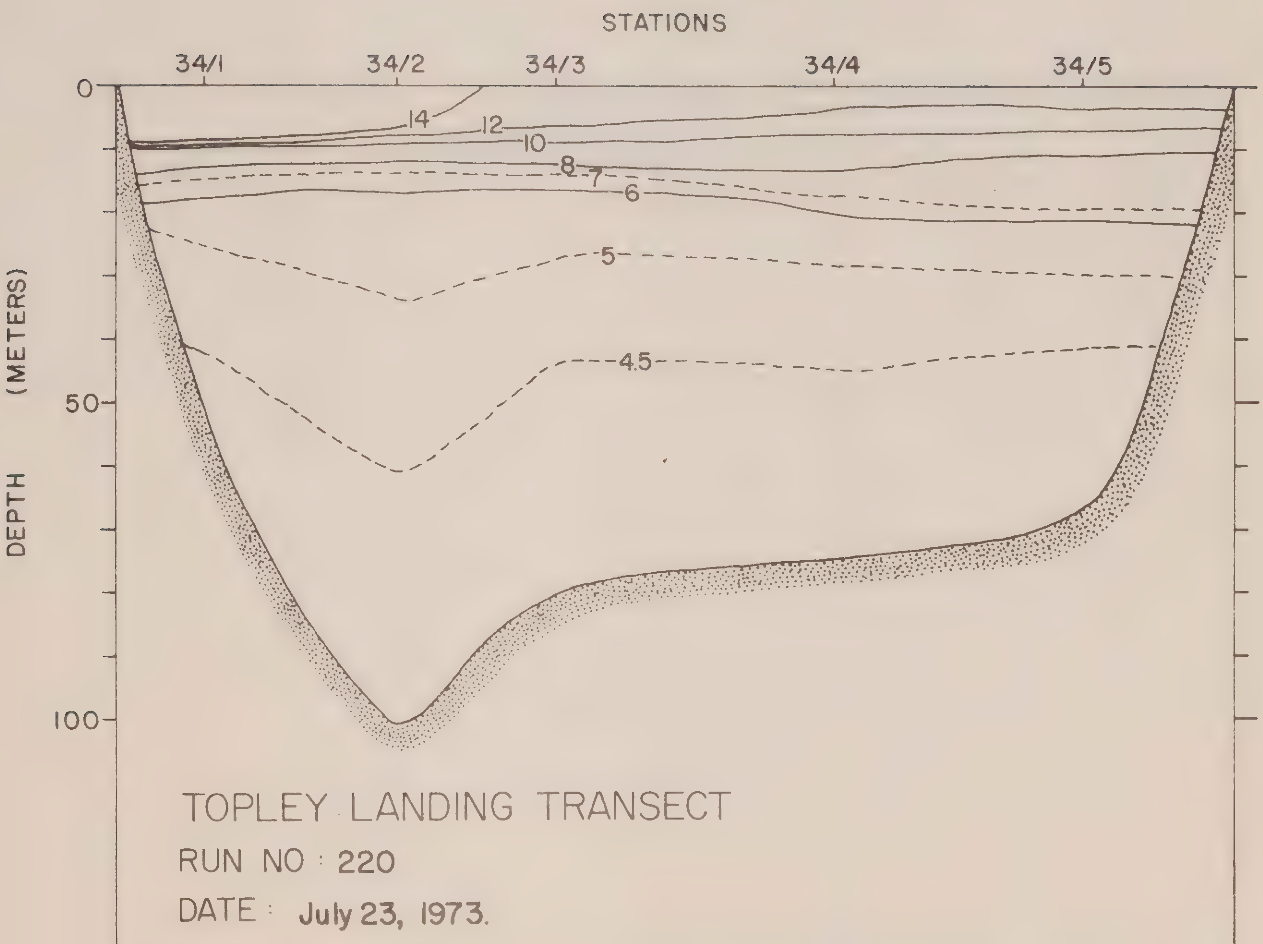

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
9
8
7
6
5.5
5
4.5
4
TOPLEY LANDING TRANSECT
RUN NO : 183
DATE : June 18, 1973.

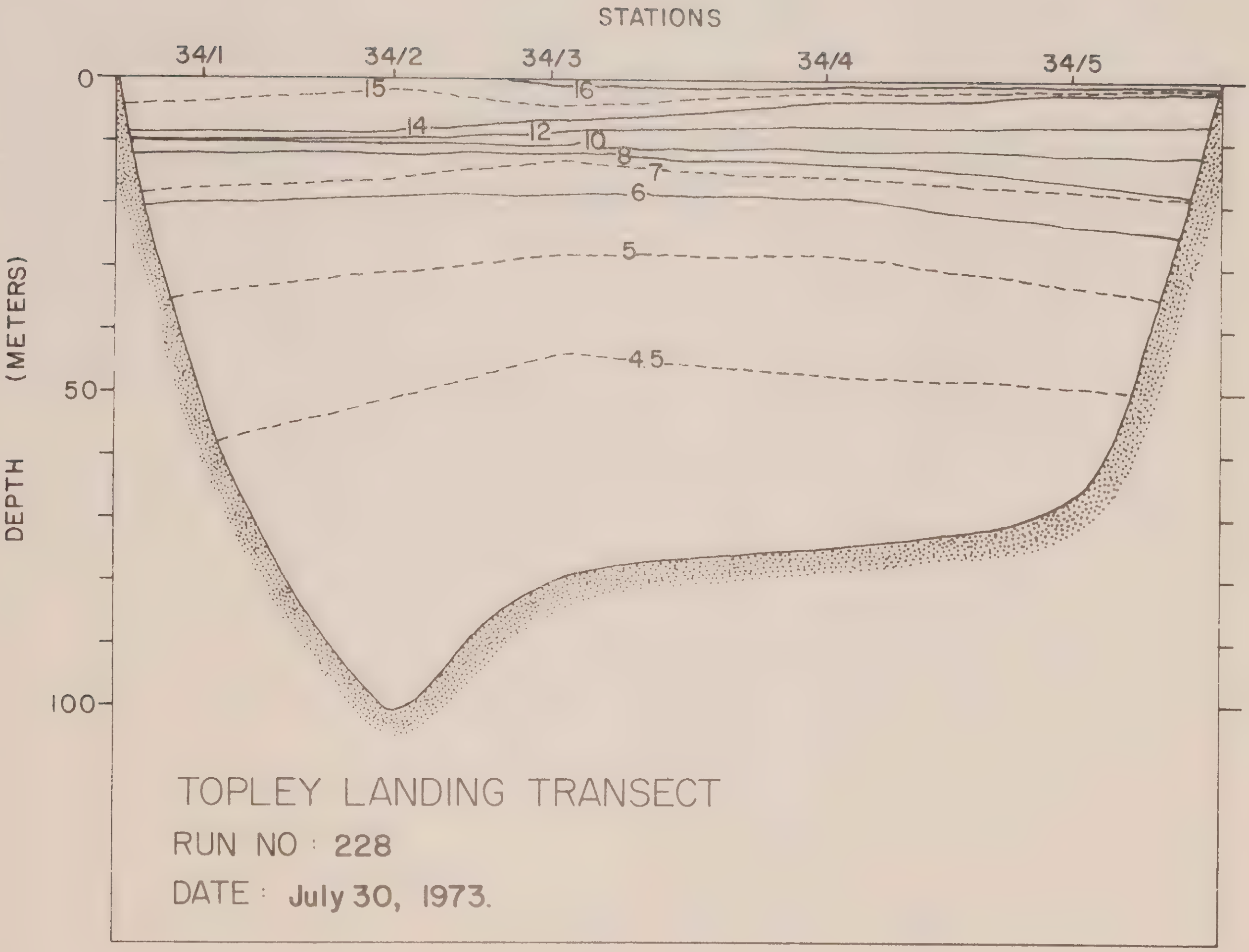

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
10
8
7
6
5
4.8
4.6
4.4
4.2
4
TOPLEY LANDING TRANSECT
RUN NO : 190
DATE : June 25, 1973.

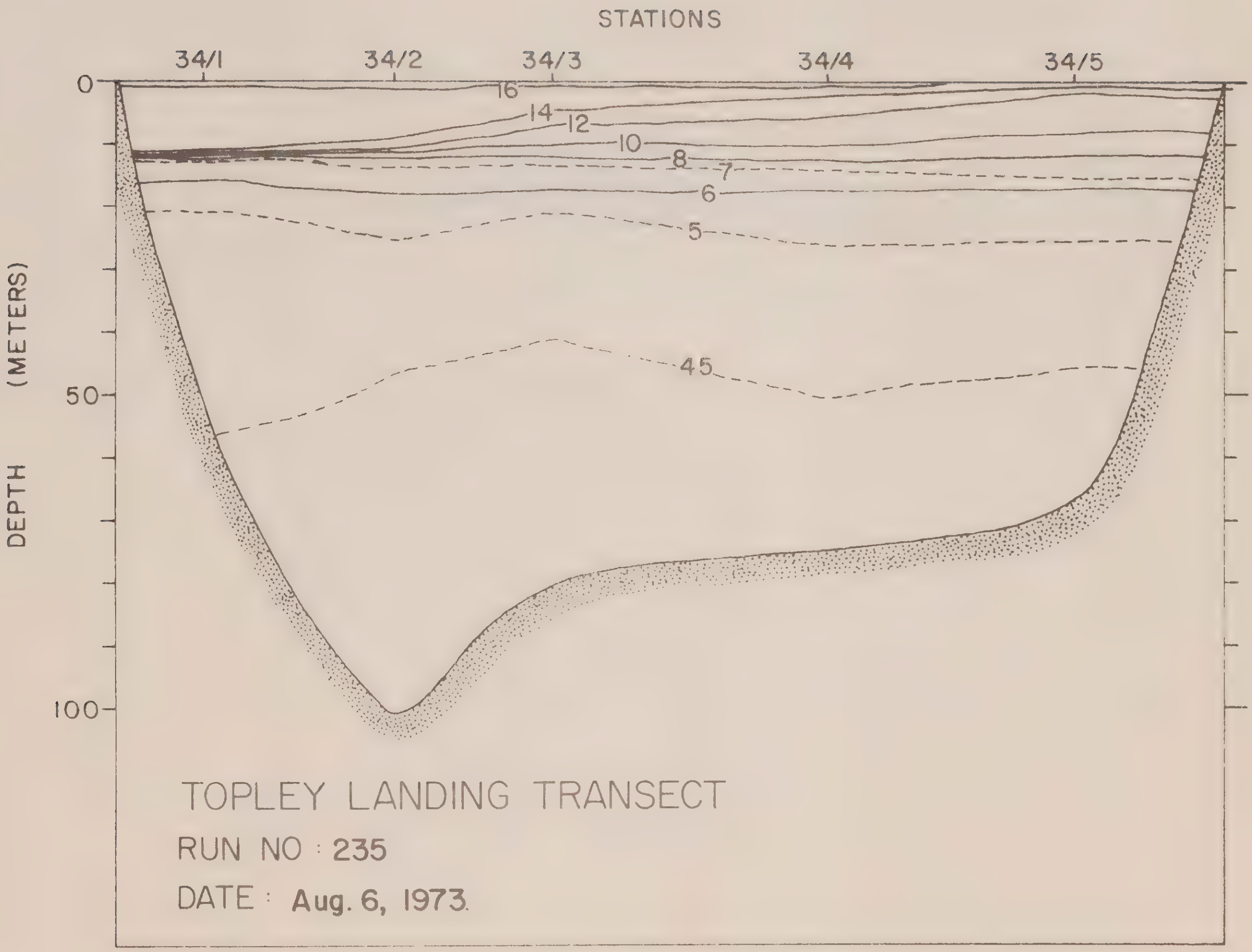

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
10
8
7
6
5
4.5
4
TOPLEY LANDING TRANSECT
RUN NO : 198
DATE : July 2, 1973.

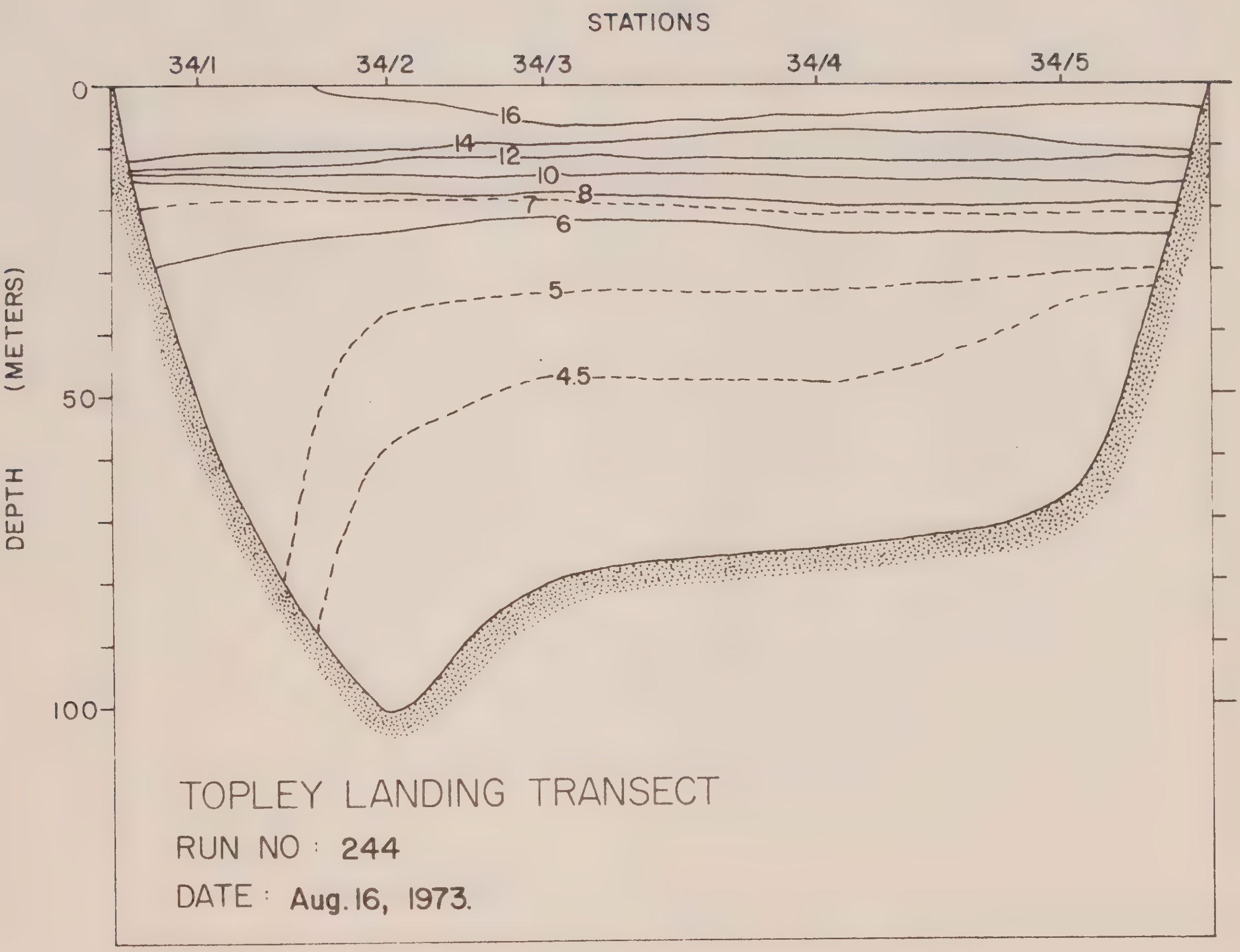

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
12
10
8
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 205
DATE : July 9, 1973.

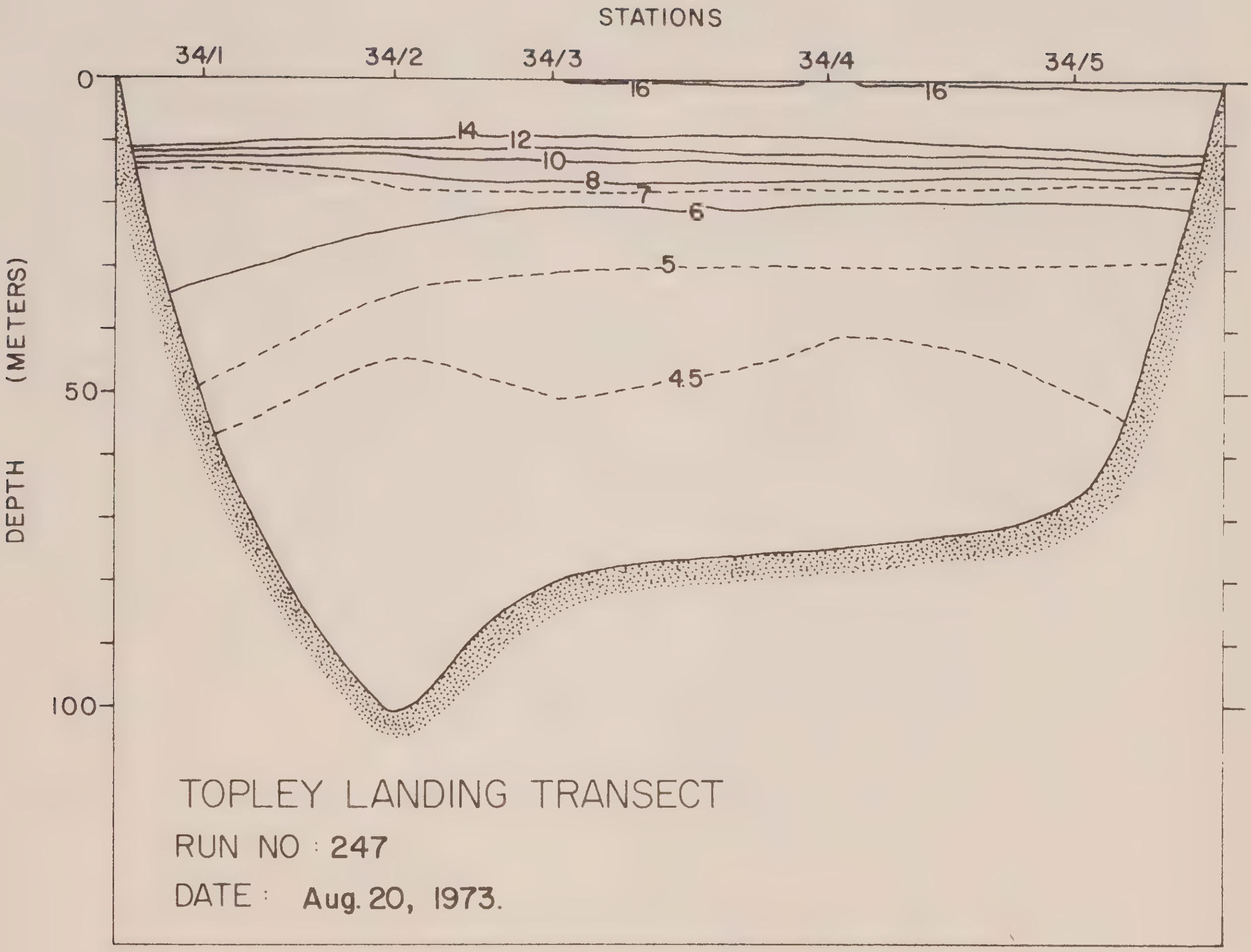

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
14
12
10
8
7
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 213
DATE : July 16, 1973.

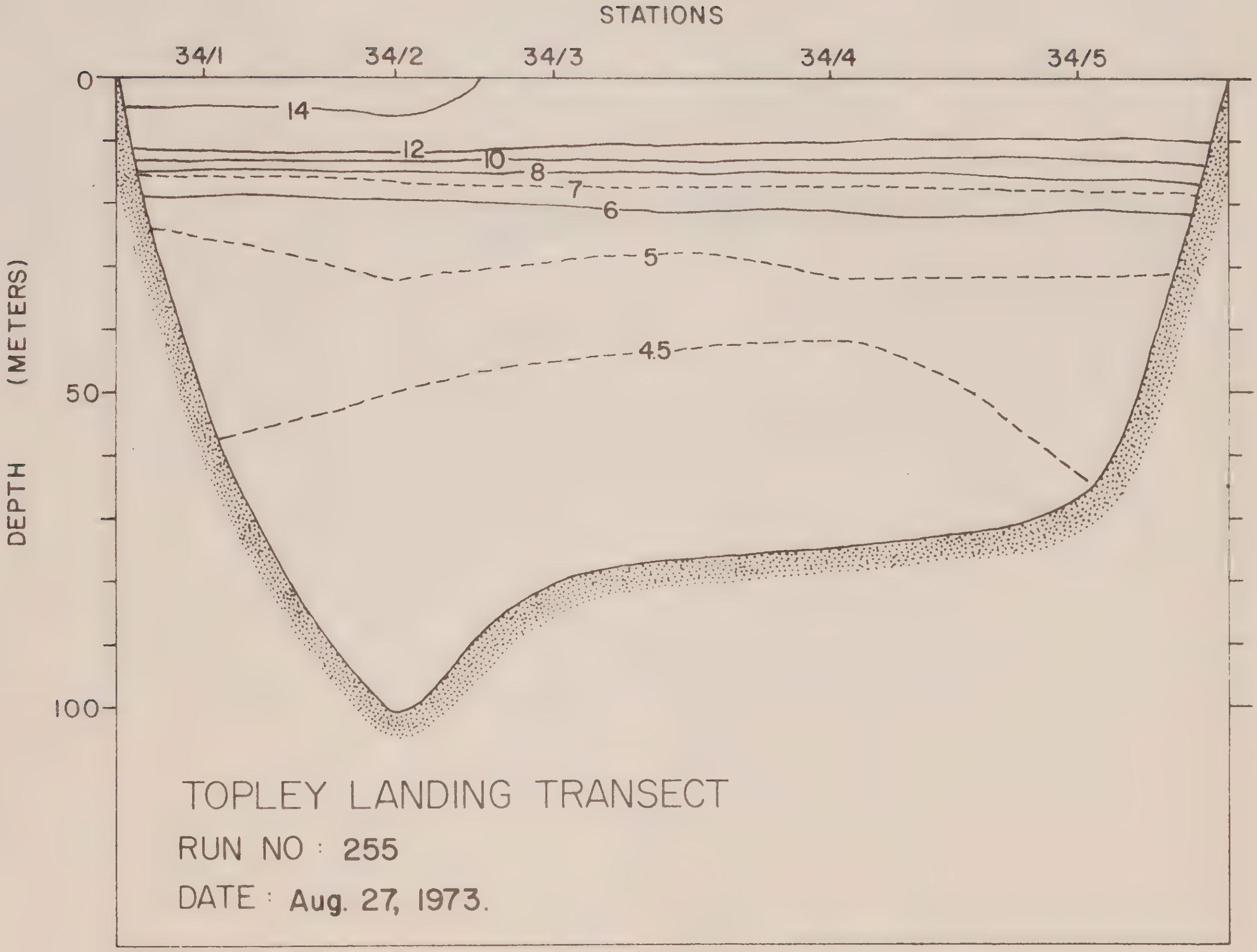

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
14
12
10
8
7
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 220
DATE : July 23, 1973.

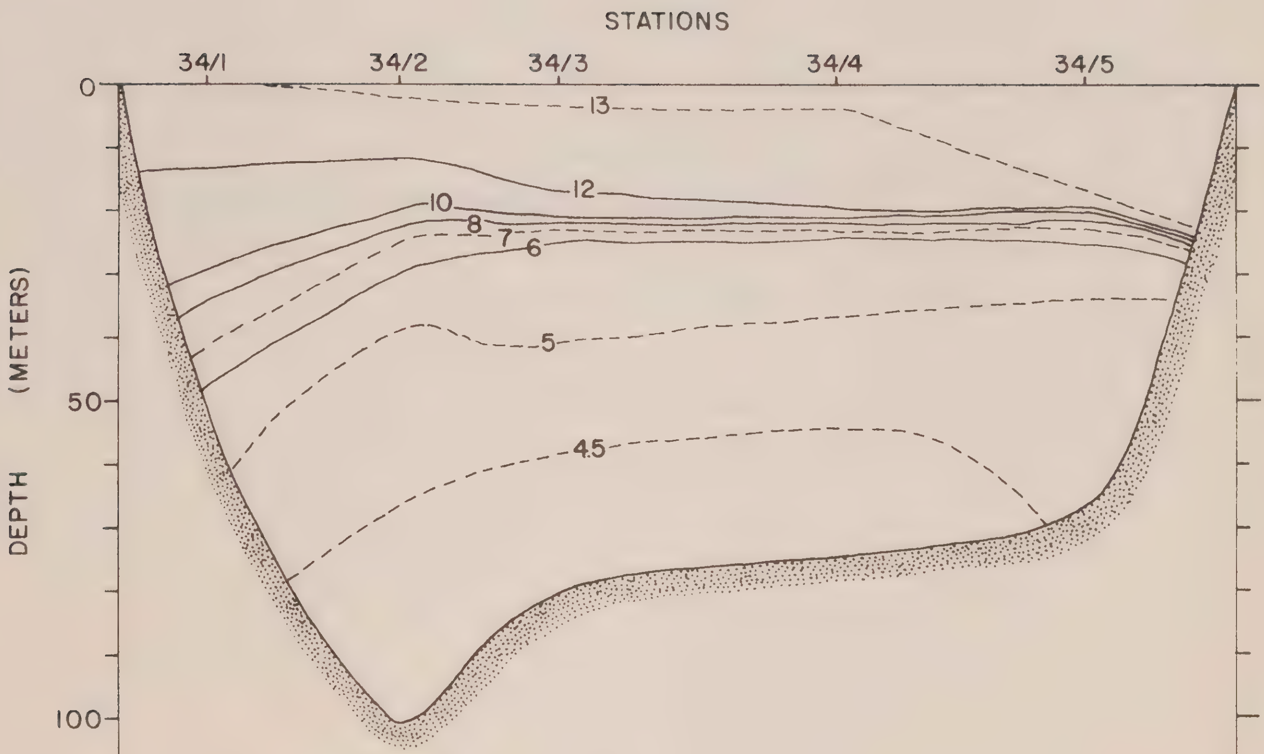

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
15
16
14
12
10
8
7
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 228
DATE : July 30, 1973.


STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
16
14
12
10
8
7
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 235
DATE : Aug. 6, 1973.


STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
16
14
12
10
8
7
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 244
DATE : Aug. 16, 1973.


STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
16
16
14
12
10
8
7
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 247
DATE : Aug. 20, 1973.

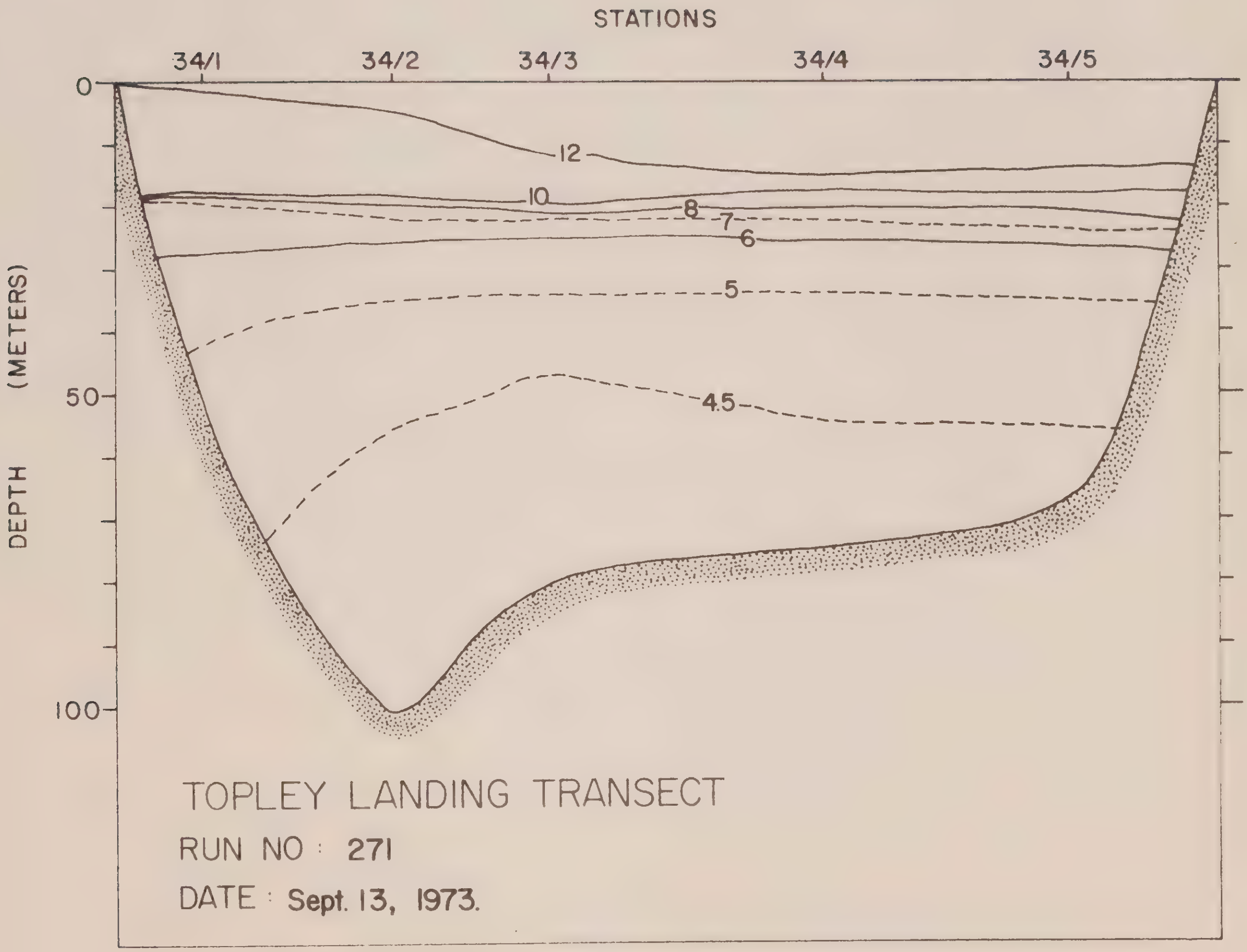

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
14
12
10
8
7
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 255
DATE : Aug. 27, 1973.

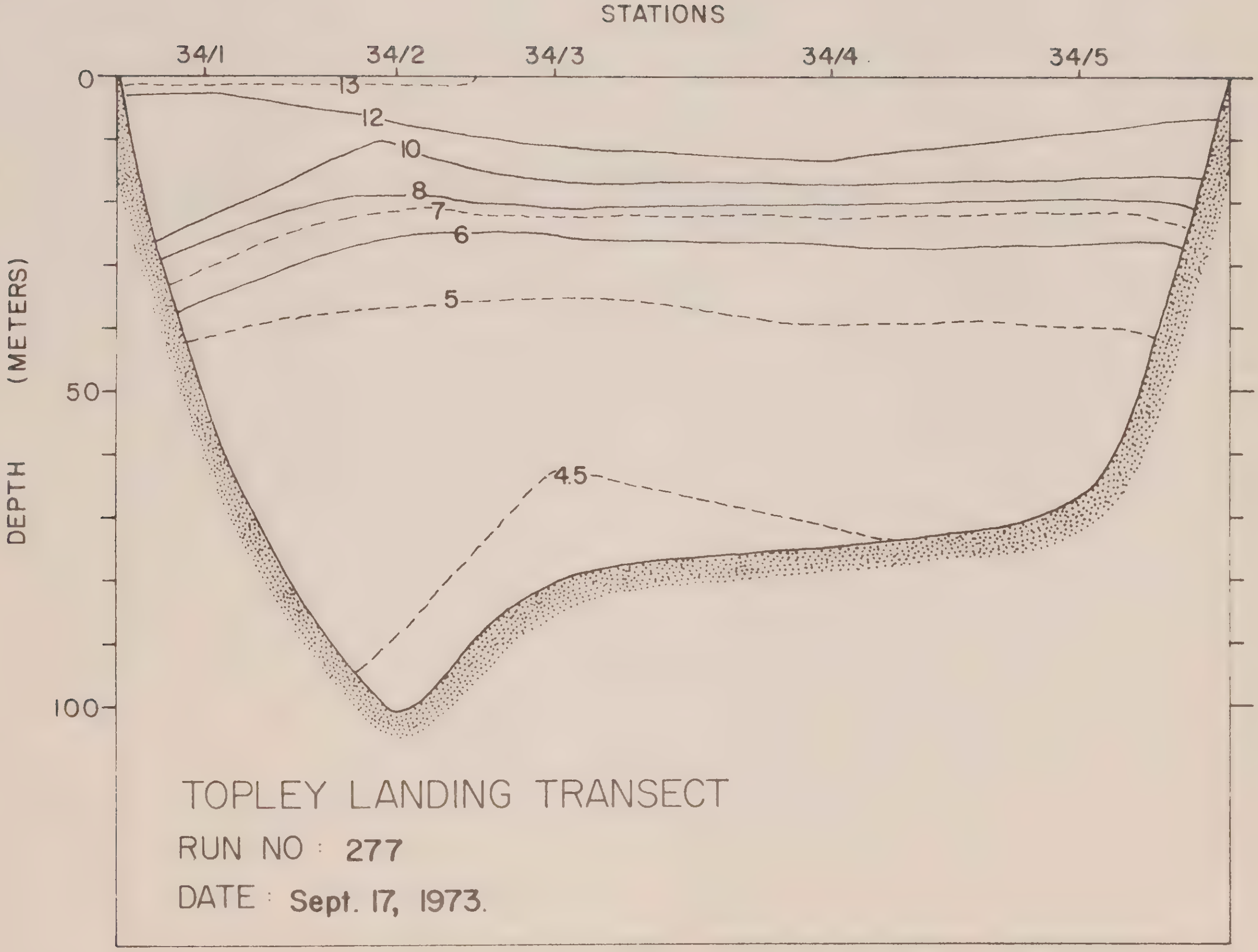


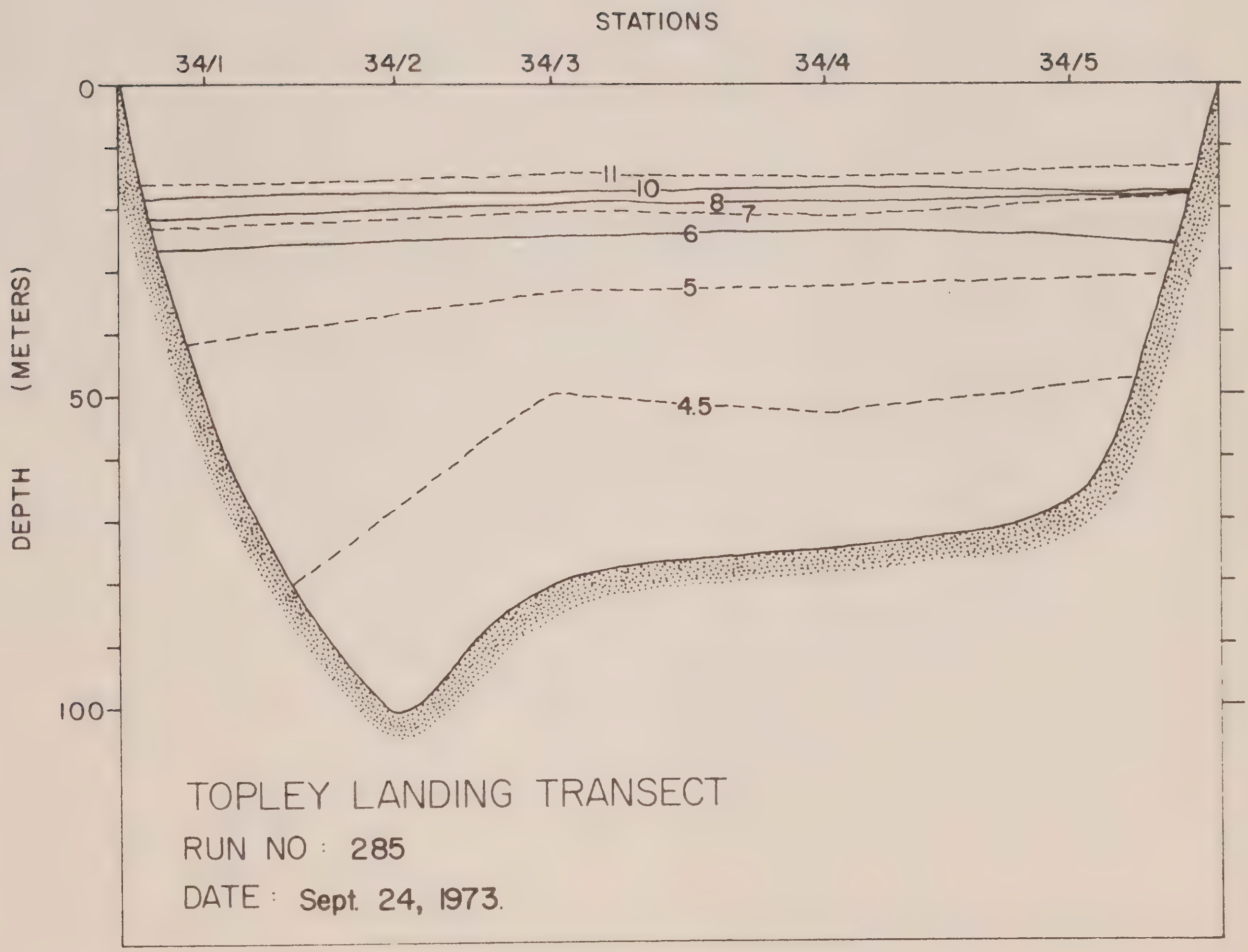
TOPLEY LANDING TRANSECT

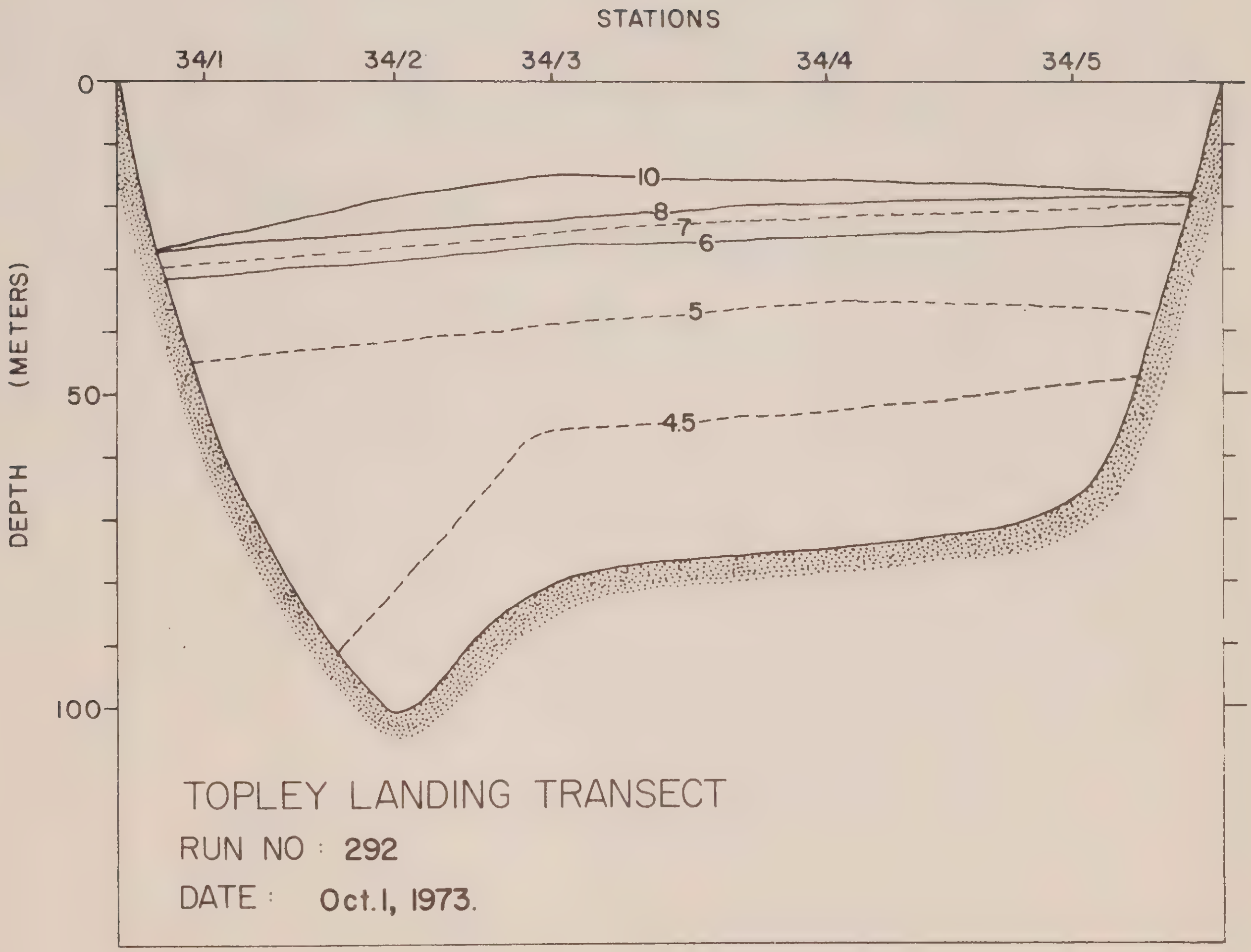
RUN NO : 263

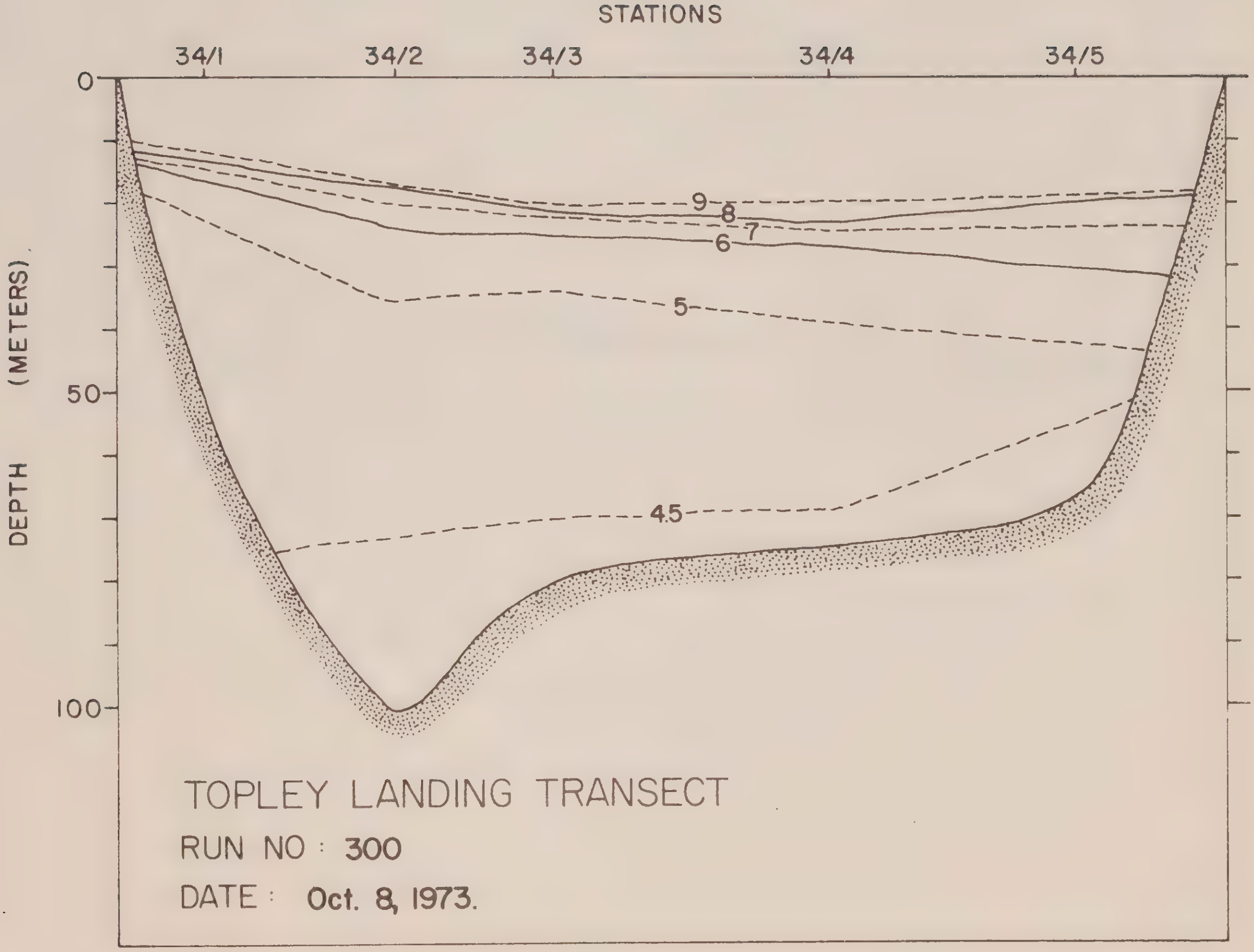
DATE : Sept. 6, 1973.


STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
12
10
8
7
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 271
DATE : Sept. 13, 1973.

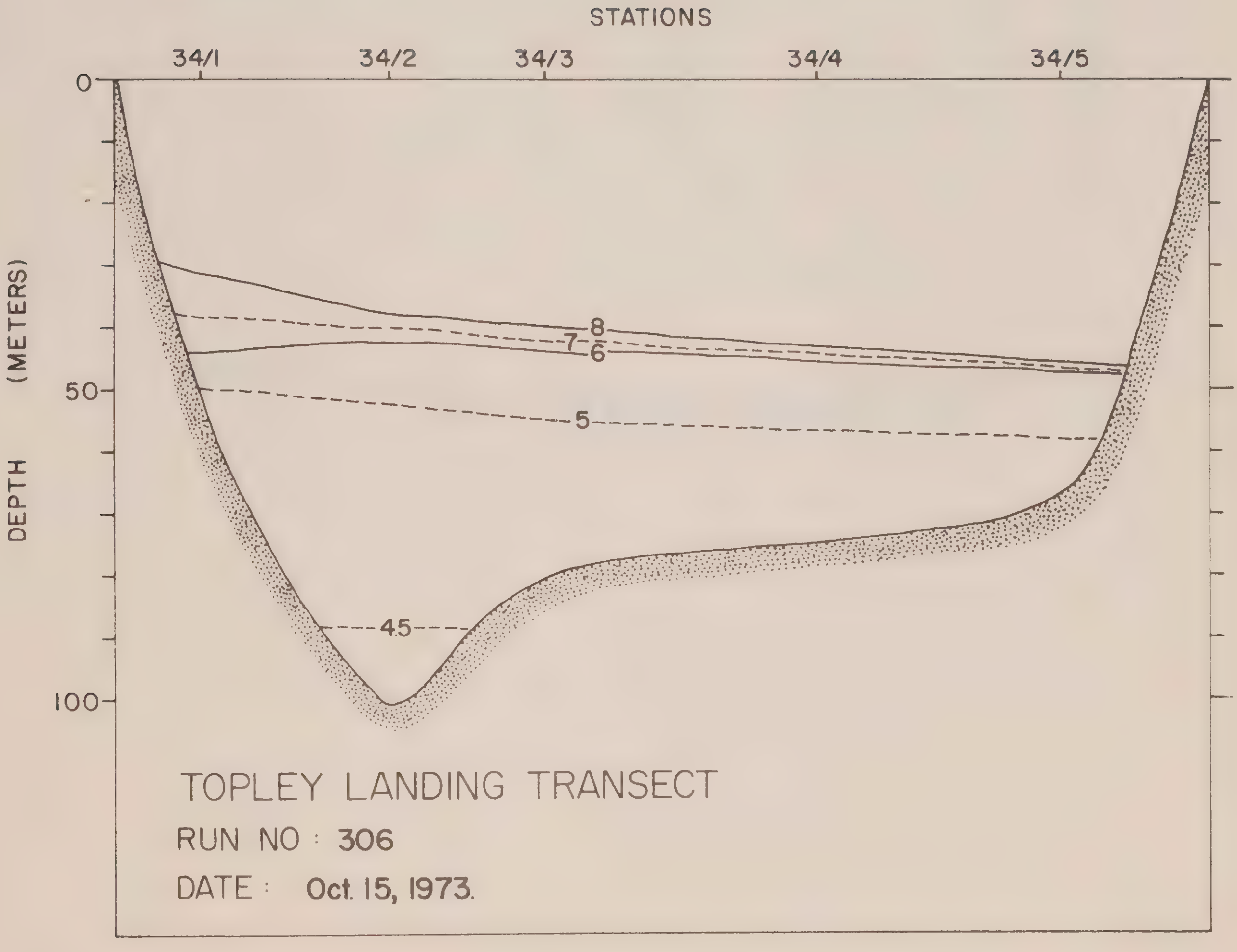

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
13
12
10
8
7
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 277
DATE : Sept. 17, 1973.


STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
11
10
8
7
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 285
DATE : Sept. 24, 1973.

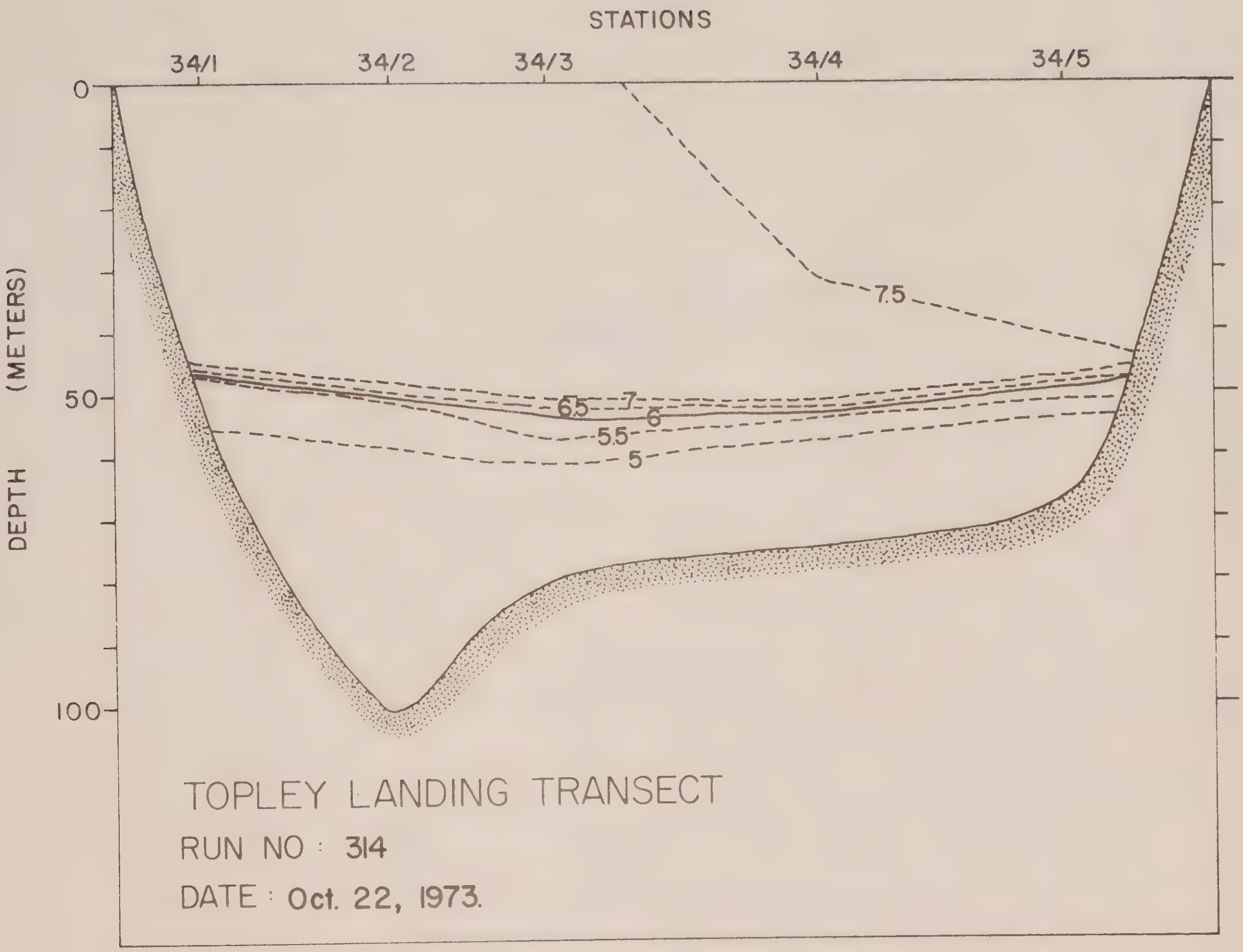

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
10
8
7
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 292
DATE : Oct.1, 1973.

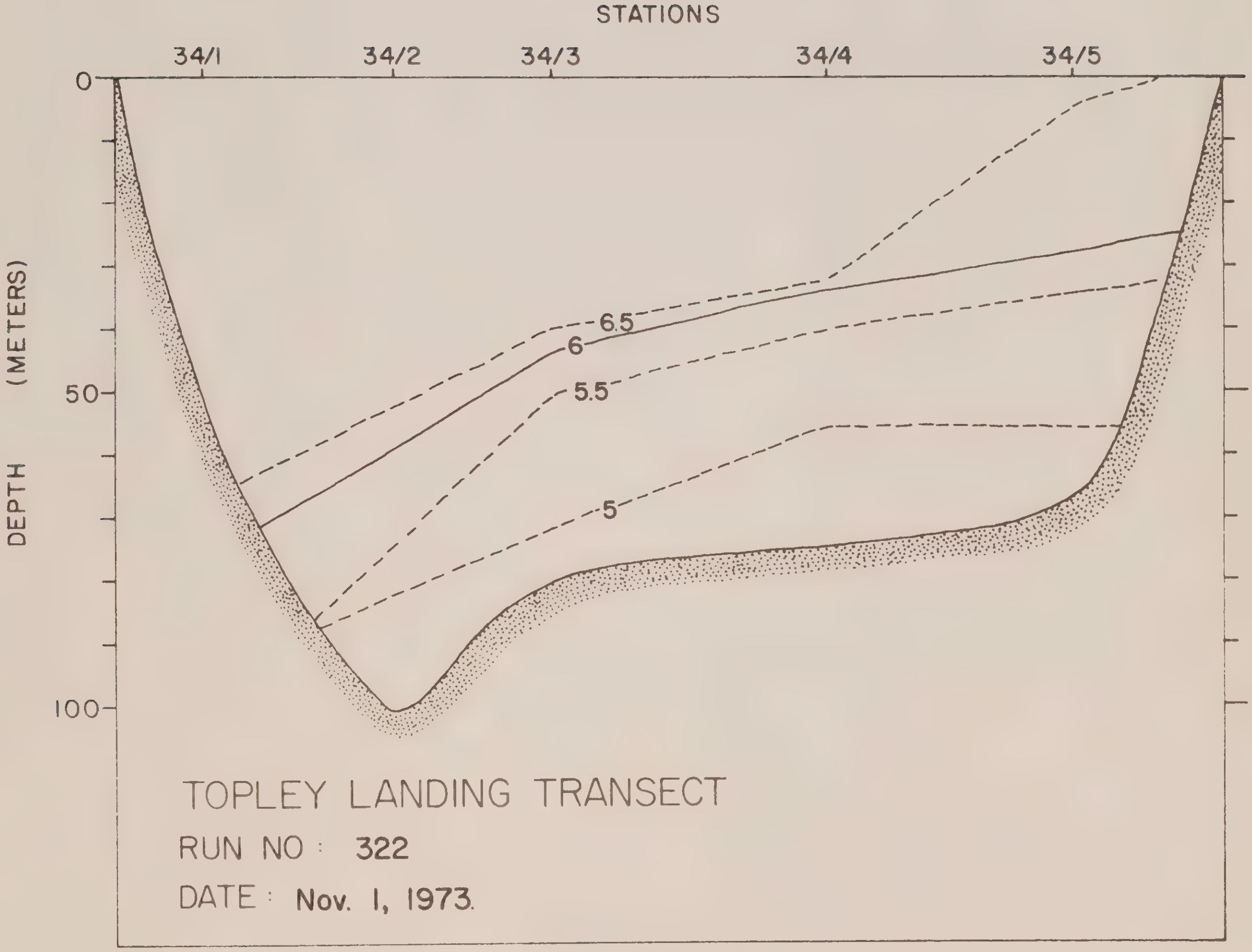


STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
9
8
7
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 300
DATE : Oct. 8, 1973.



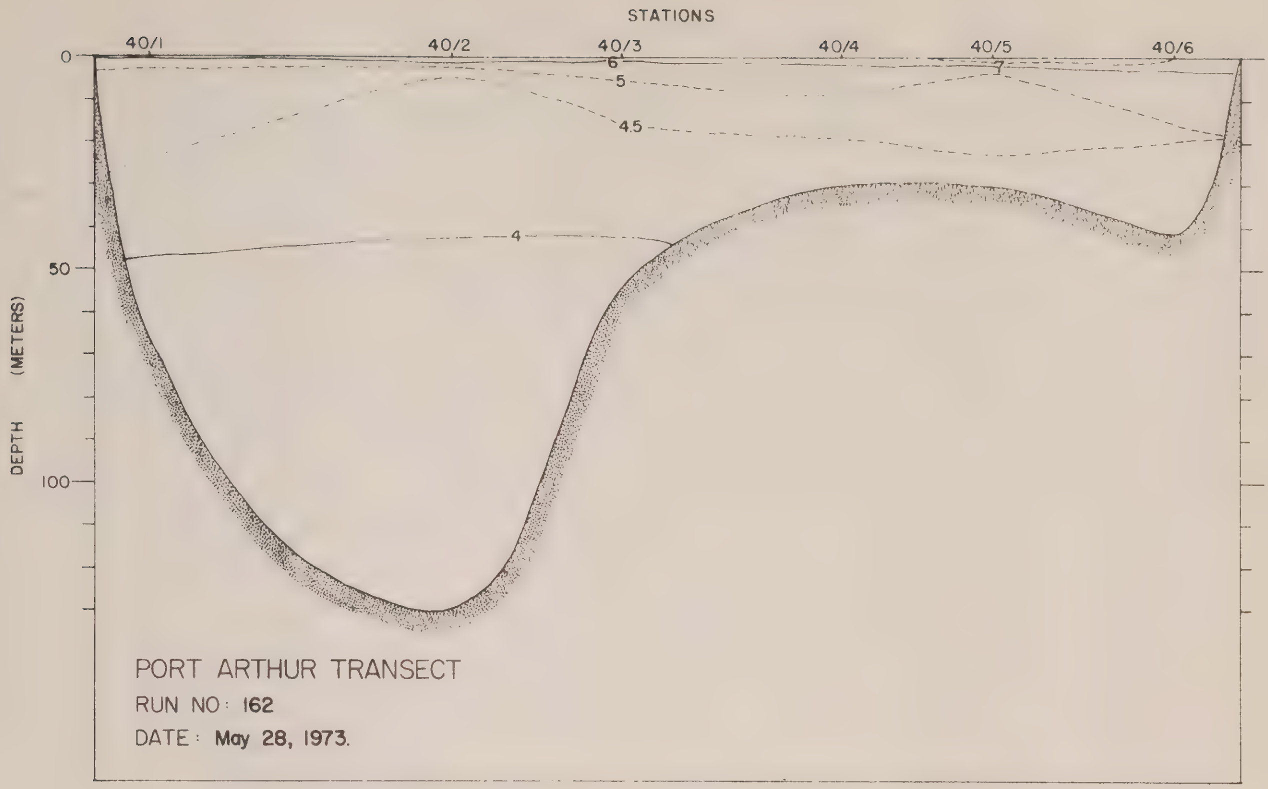
STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
8
7
6
5
4.5
TOPLEY LANDING TRANSECT
RUN NO : 306
DATE : Oct. 15, 1973.

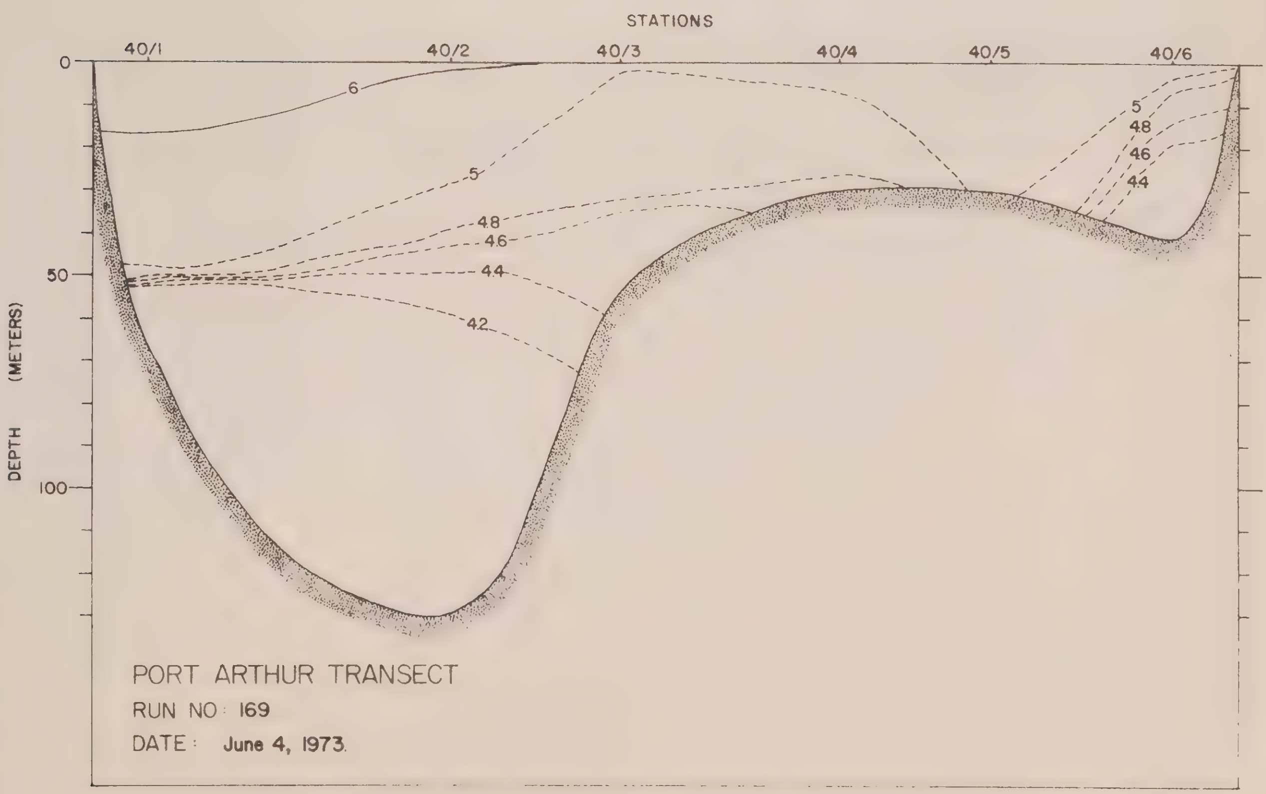

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
7.5
7
6.5
6
5.5
5
TOPLEY LANDING TRANSECT
RUN NO : 314
DATE : Oct. 22, 1973.

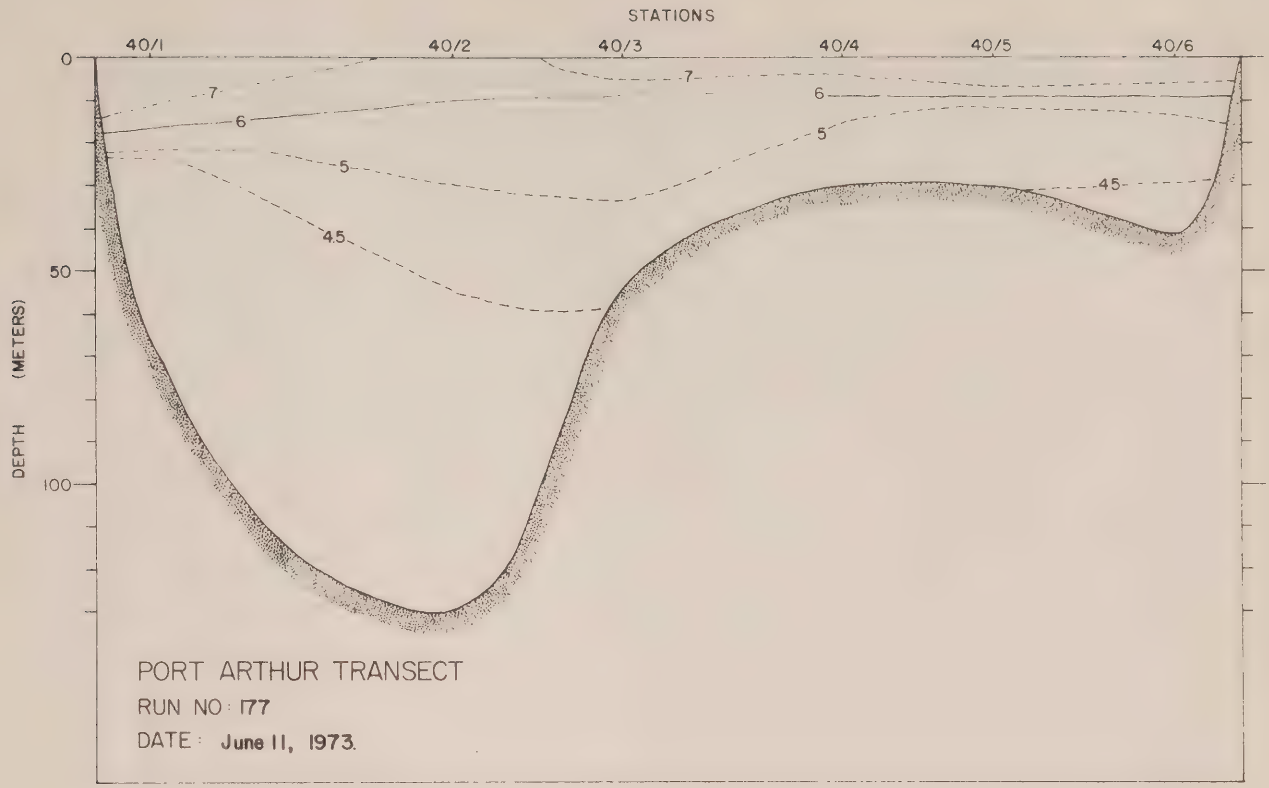

STATIONS
34/1
34/2
34/3
34/4
34/5
0
50
100
DEPTH (METERS)
6.5
6
5.5
5
TOPLEY LANDING TRANSECT
RUN NO : 322
DATE : Nov. 1, 1973.

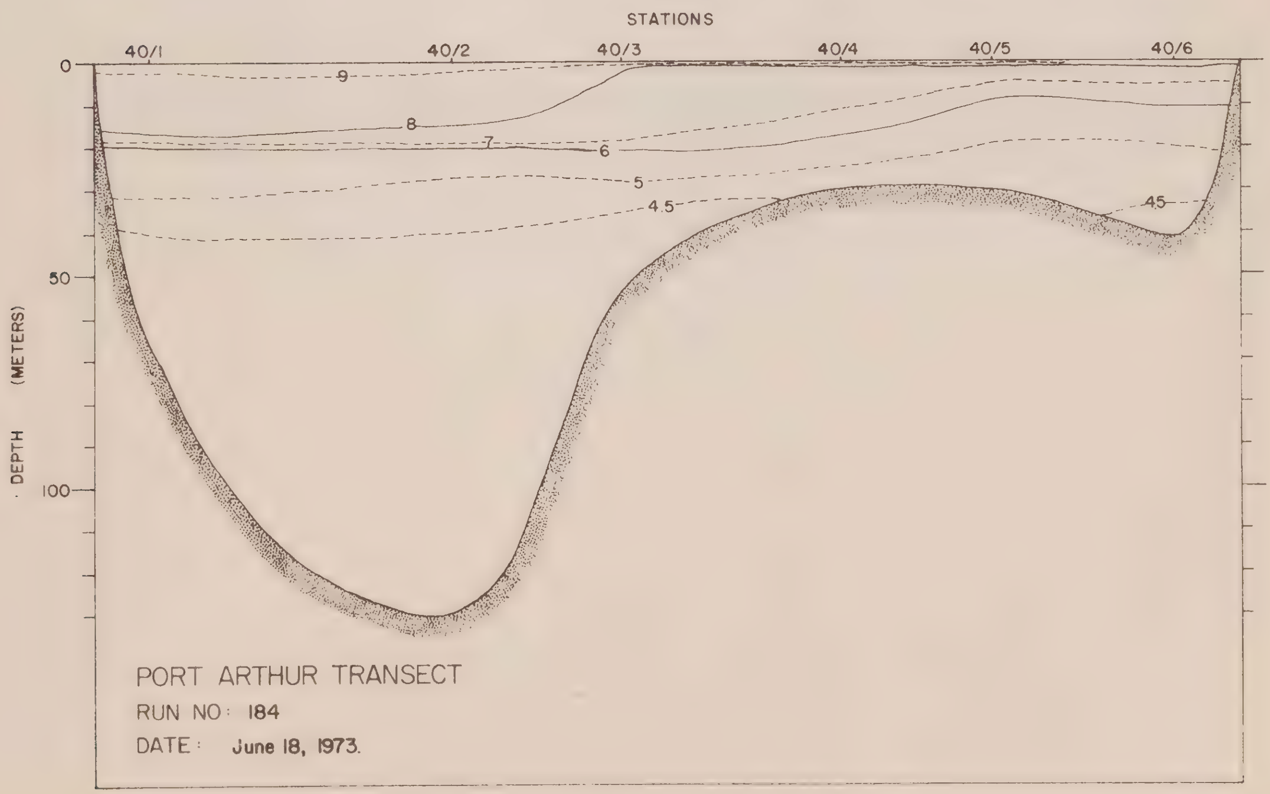
READER'S NOTES:

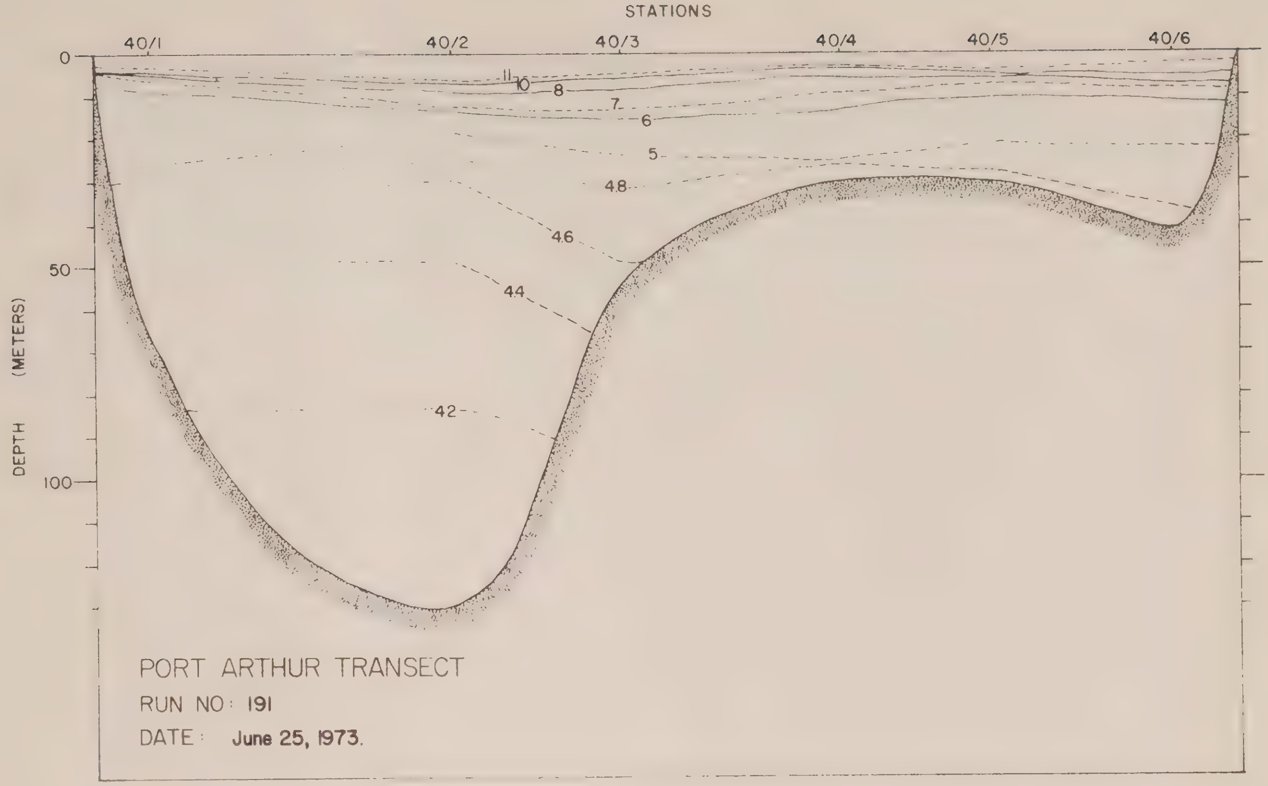
PORT ARTHUR TRANSECT (MAY 28 - OCTOBER 22)

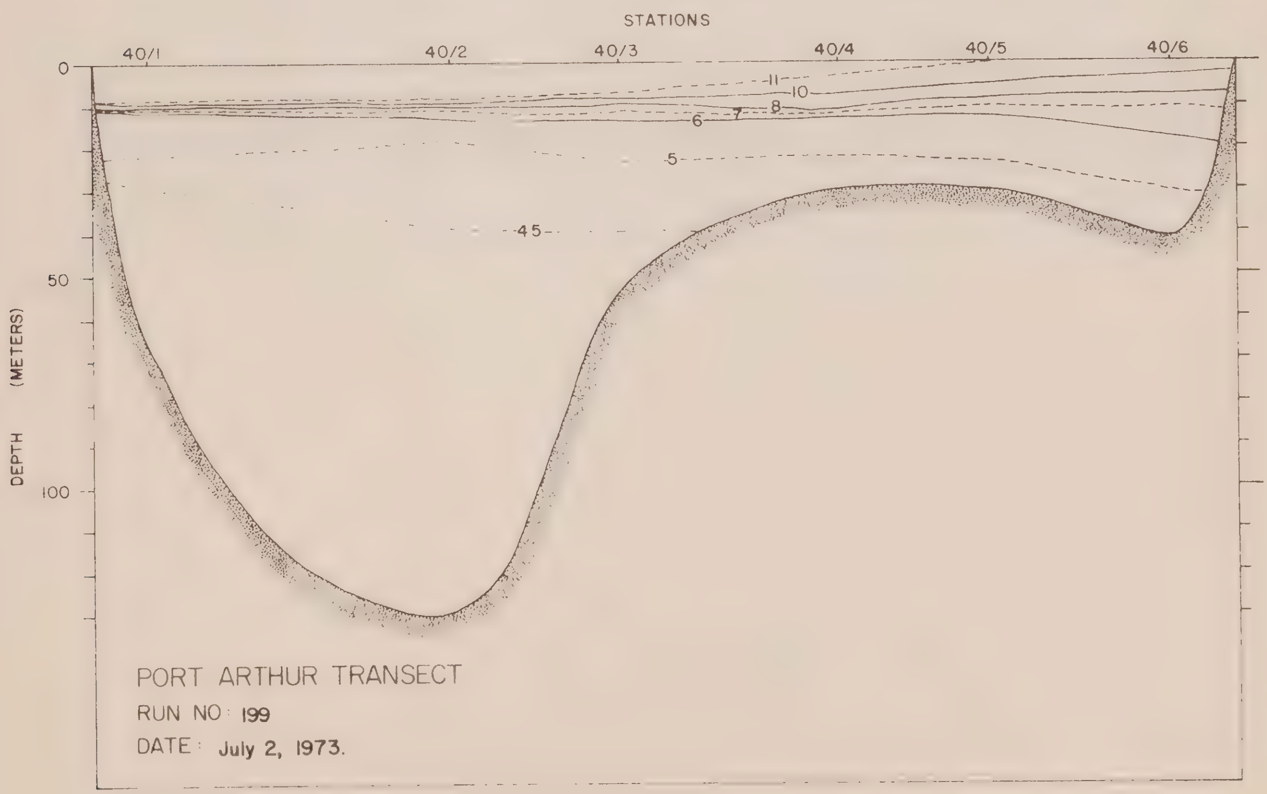

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
6
7
5
4.5
4
PORT ARTHUR TRANSECT
RUN NO: 162
DATE: May 28, 1973.

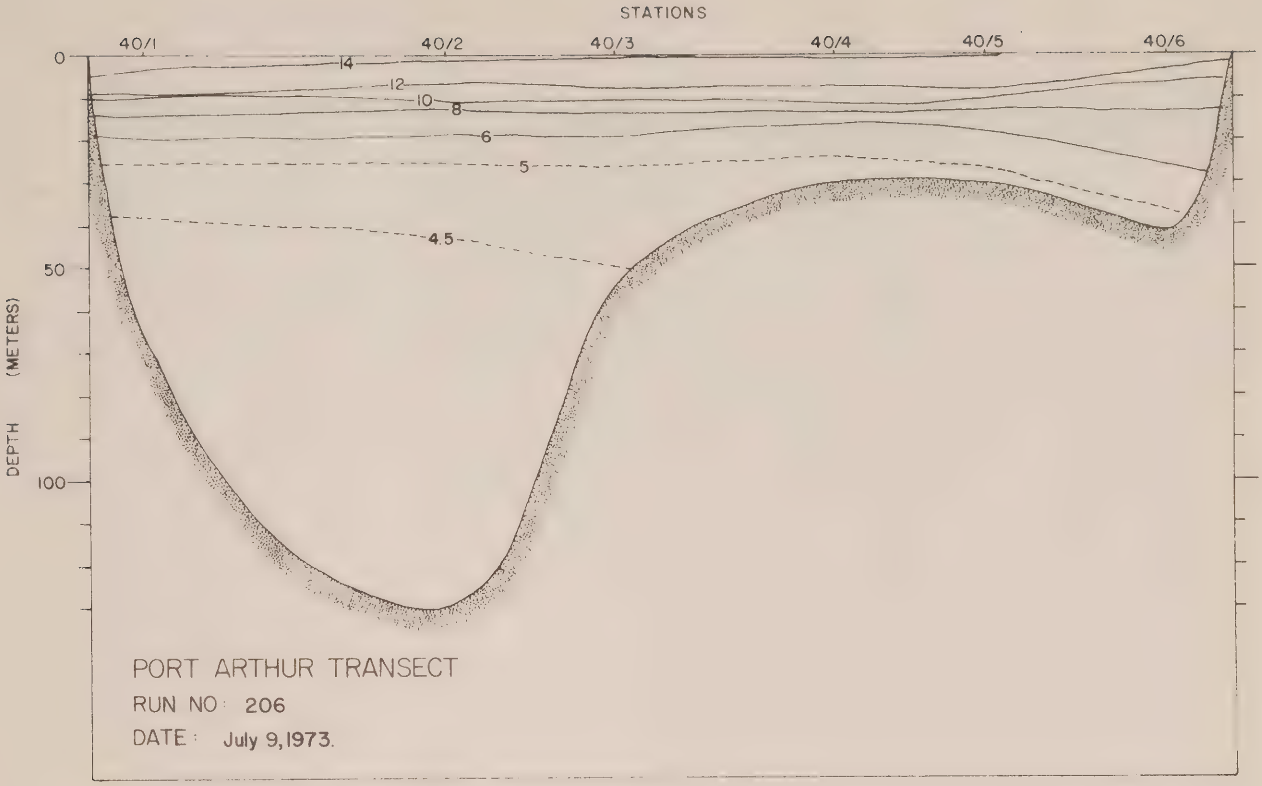

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
6
5
4.8
4.6
4.4
4.2
5
4.8
4.6
4.4
PORT ARTHUR TRANSECT
RUN NO: 169
DATE: June 4, 1973.

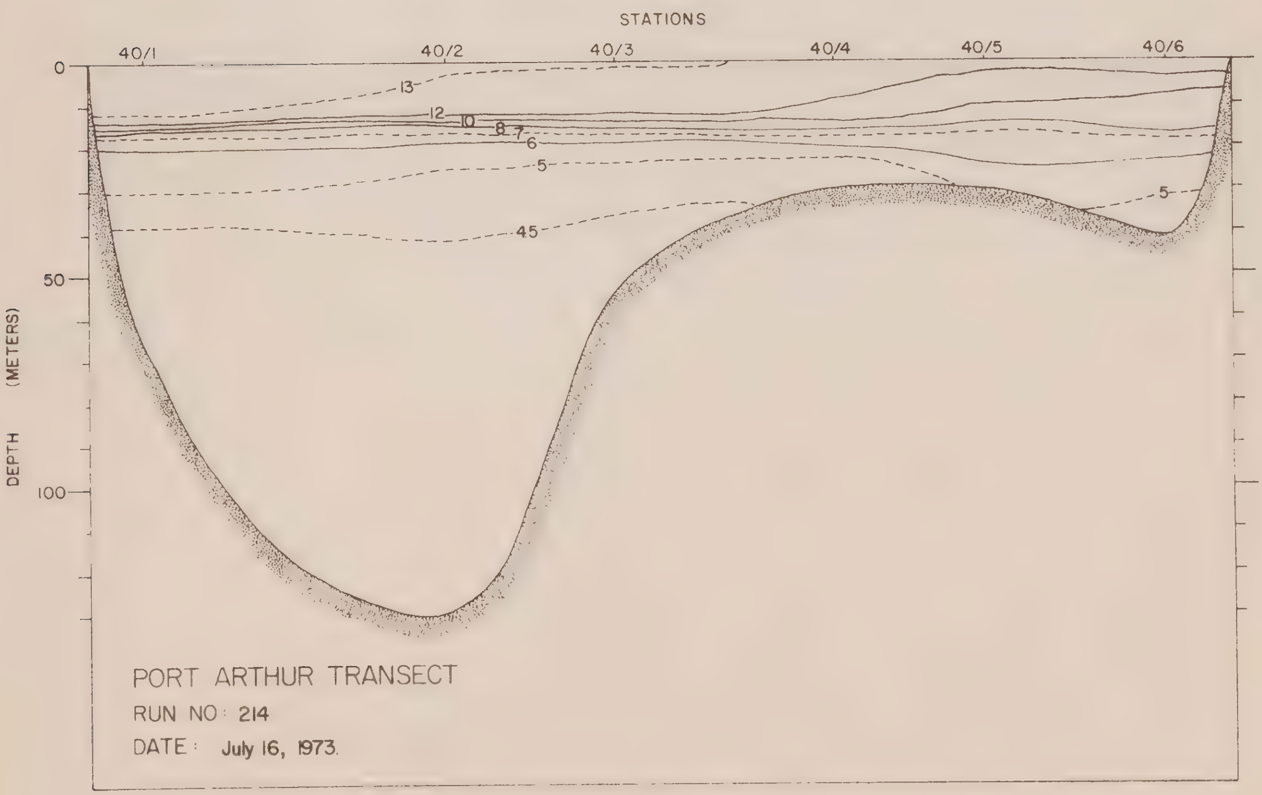

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
7
6
5
4.5
PORT ARTHUR TRANSECT
RUN NO: 177
DATE: June 11, 1973.

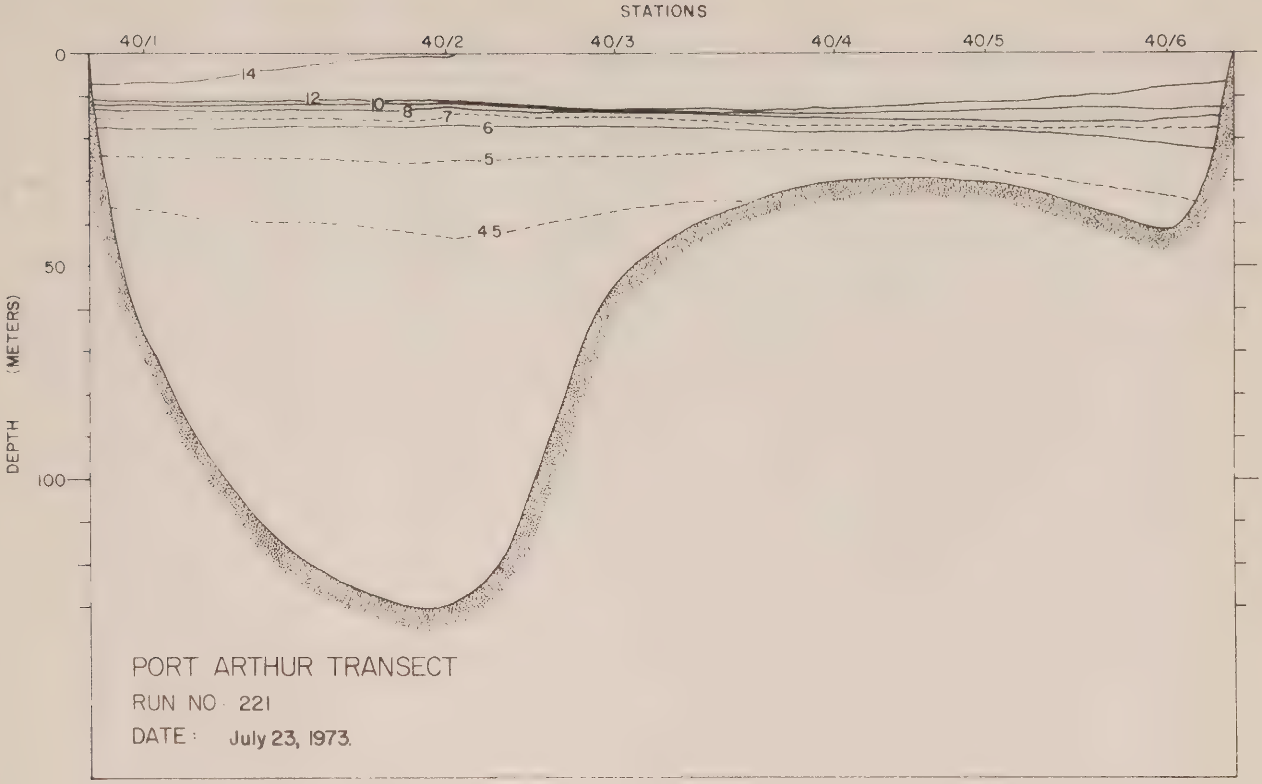

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
9
8
7
6
5
4.5
PORT ARTHUR TRANSECT
RUN NO: 184
DATE: June 18, 1973.

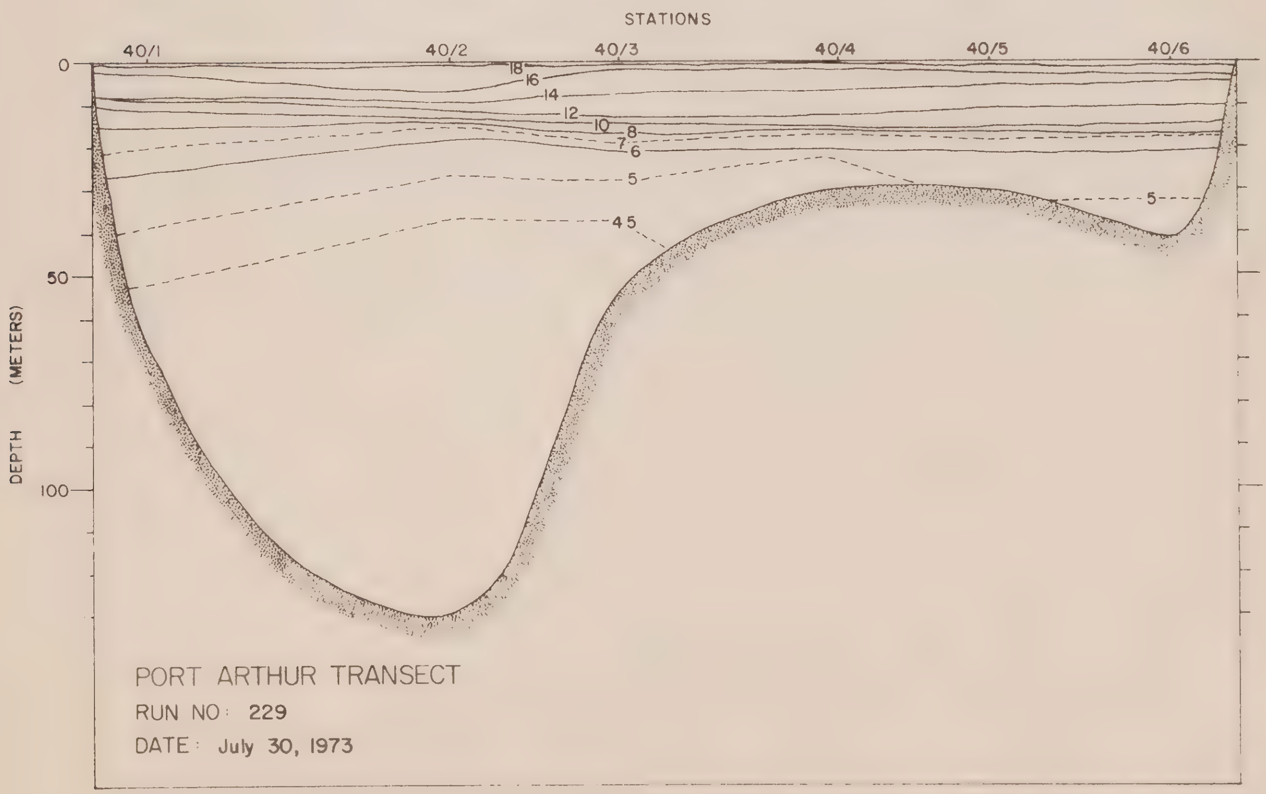

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
11
10
8
7
6
5
4.8
4.6
4.4
4.2
PORT ARTHUR TRANSECT
RUN NO: 191
DATE: June 25, 1973.

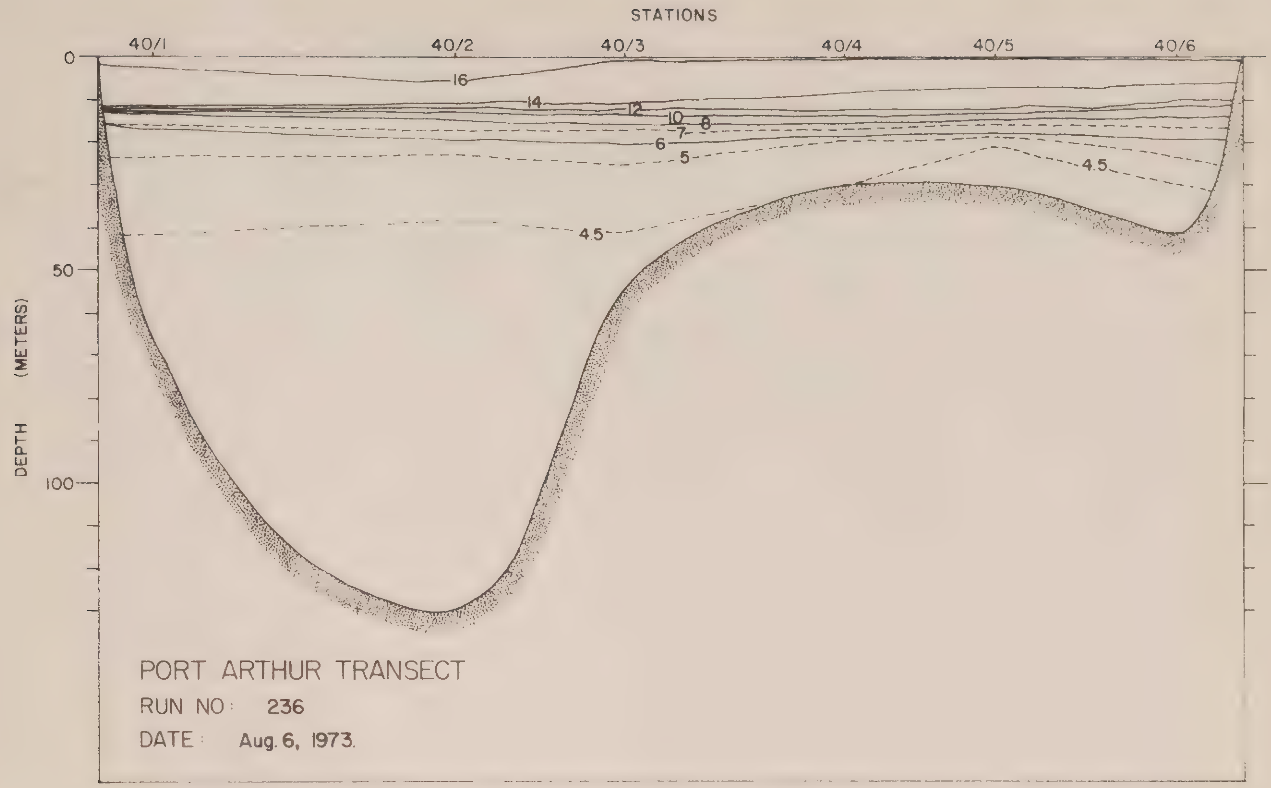

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
11
10
8
7
6
5
4.5
PORT ARTHUR TRANSECT
RUN NO: 199
DATE: July 2, 1973.

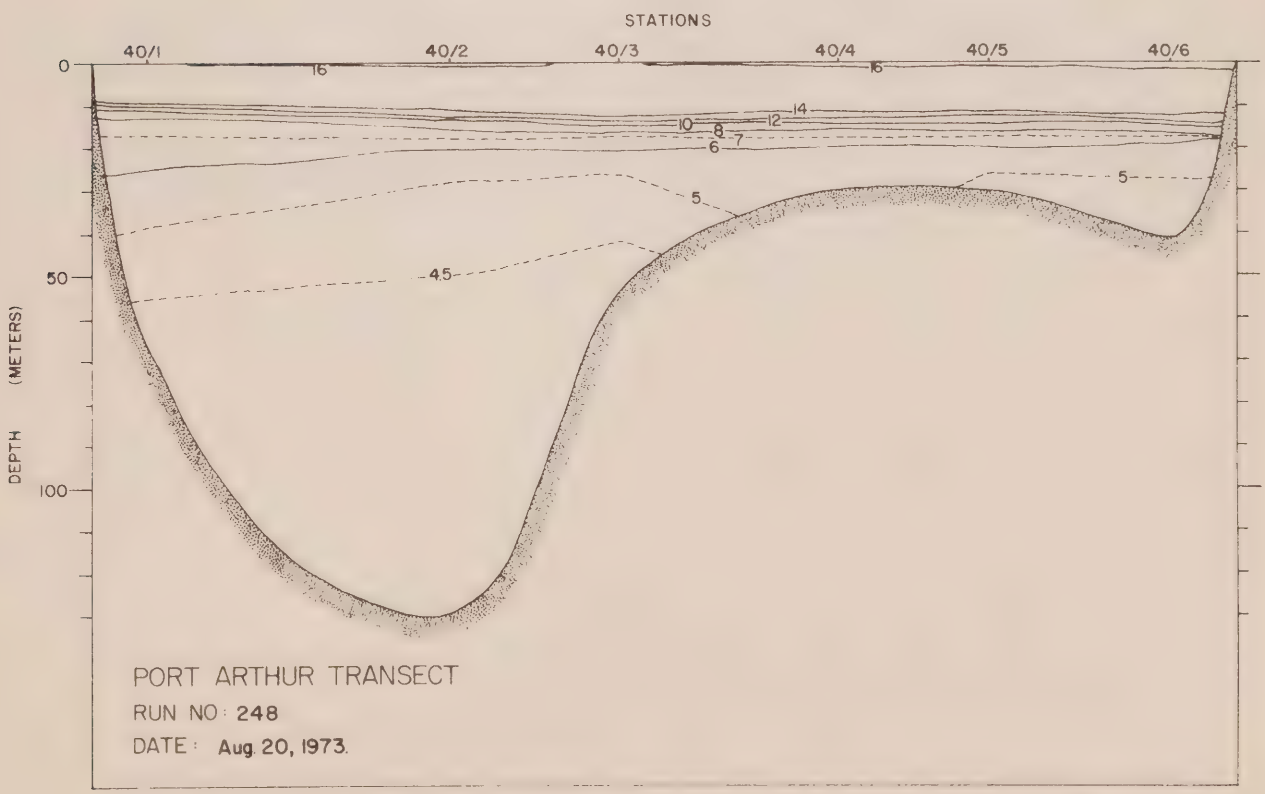

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
14
12
10
8
6
5
4.5
PORT ARTHUR TRANSECT
RUN NO: 206
DATE: July 9, 1973.

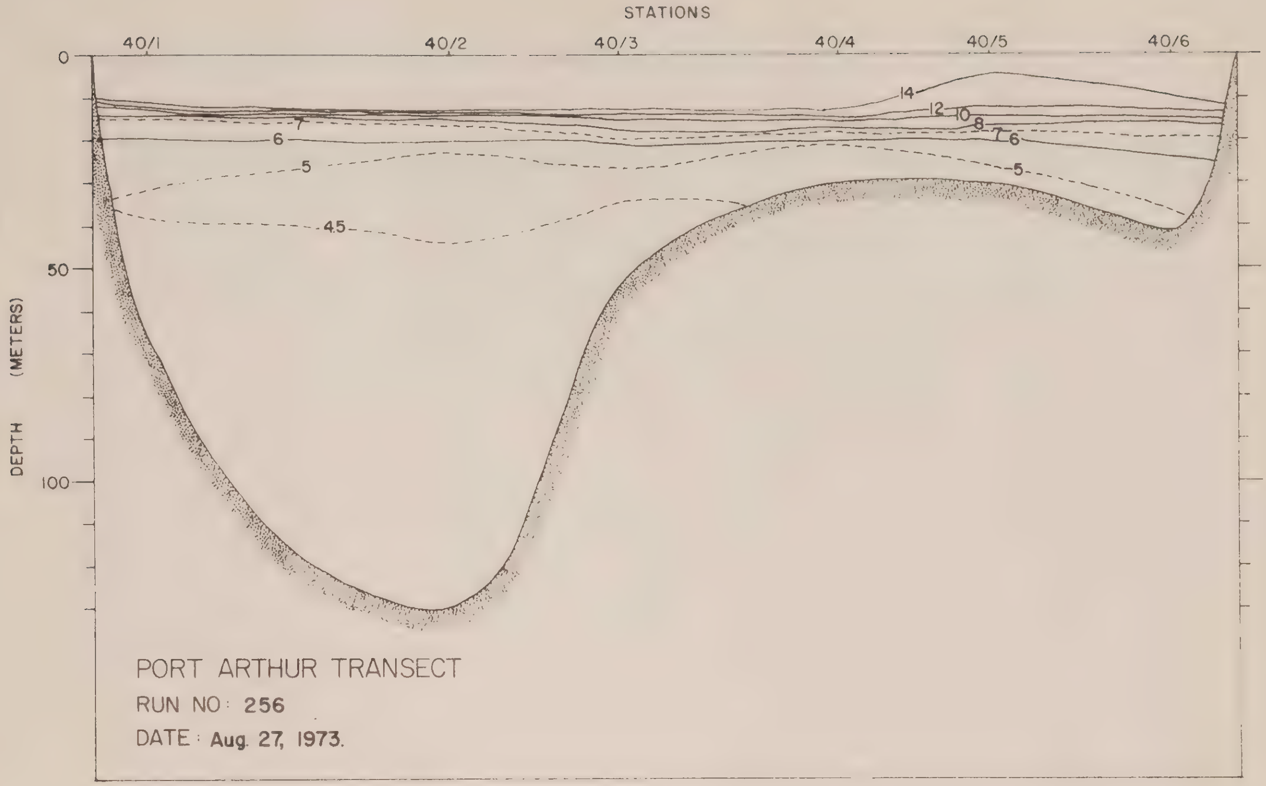

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
13
12
10
8
7
6
5
4.5
5
PORT ARTHUR TRANSECT
RUN NO: 214
DATE: July 16, 1973.

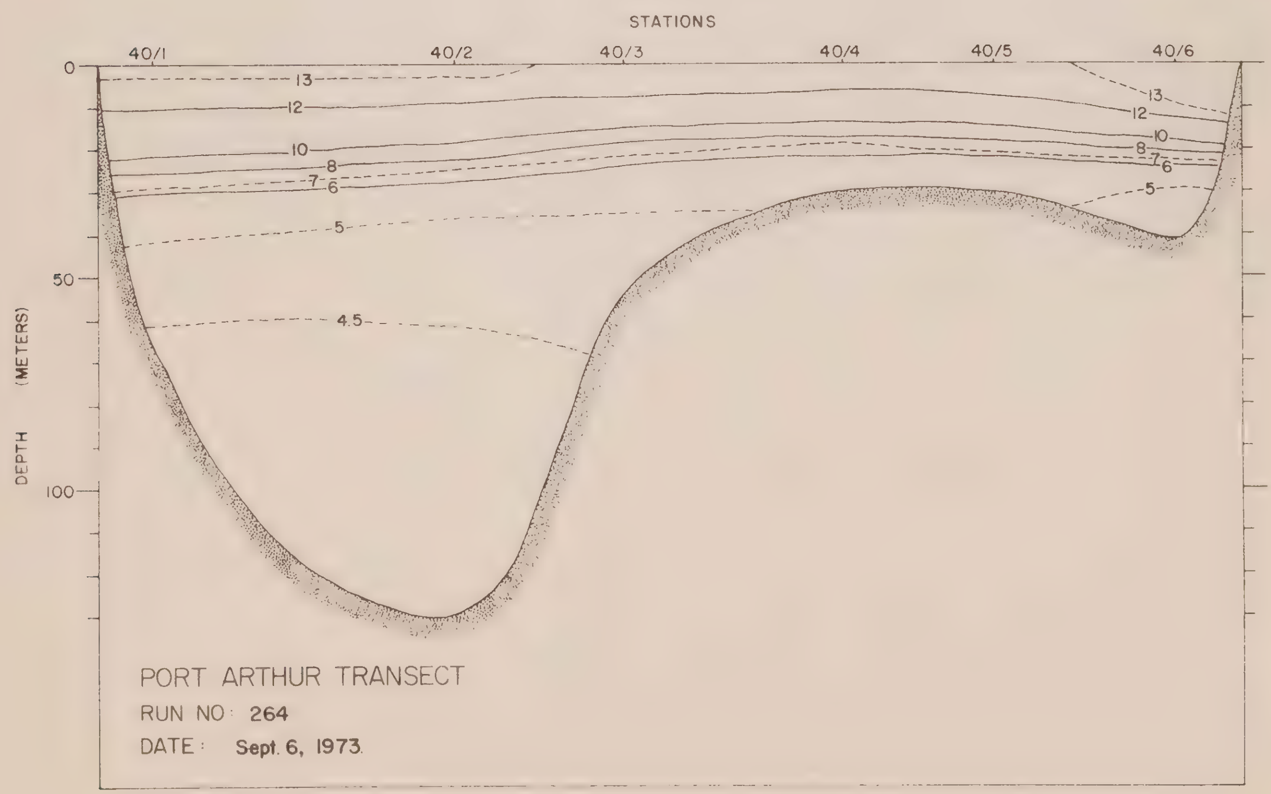

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
14
12
10
8
7
6
5
4.5
PORT ARTHUR TRANSECT
RUN NO. 221
DATE: July 23, 1973.

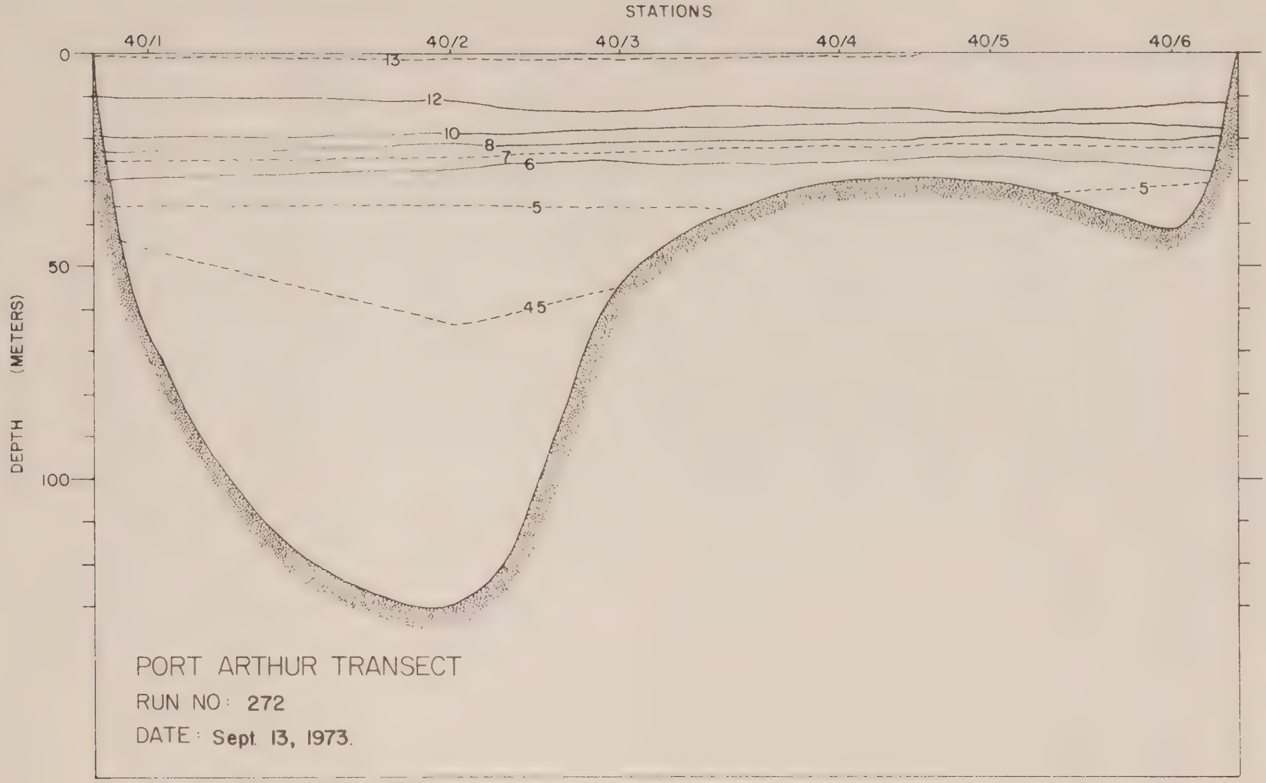

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
18
16
14
12
10
8
7
6
5
4.5
5
PORT ARTHUR TRANSECT
RUN NO: 229
DATE: July 30, 1973

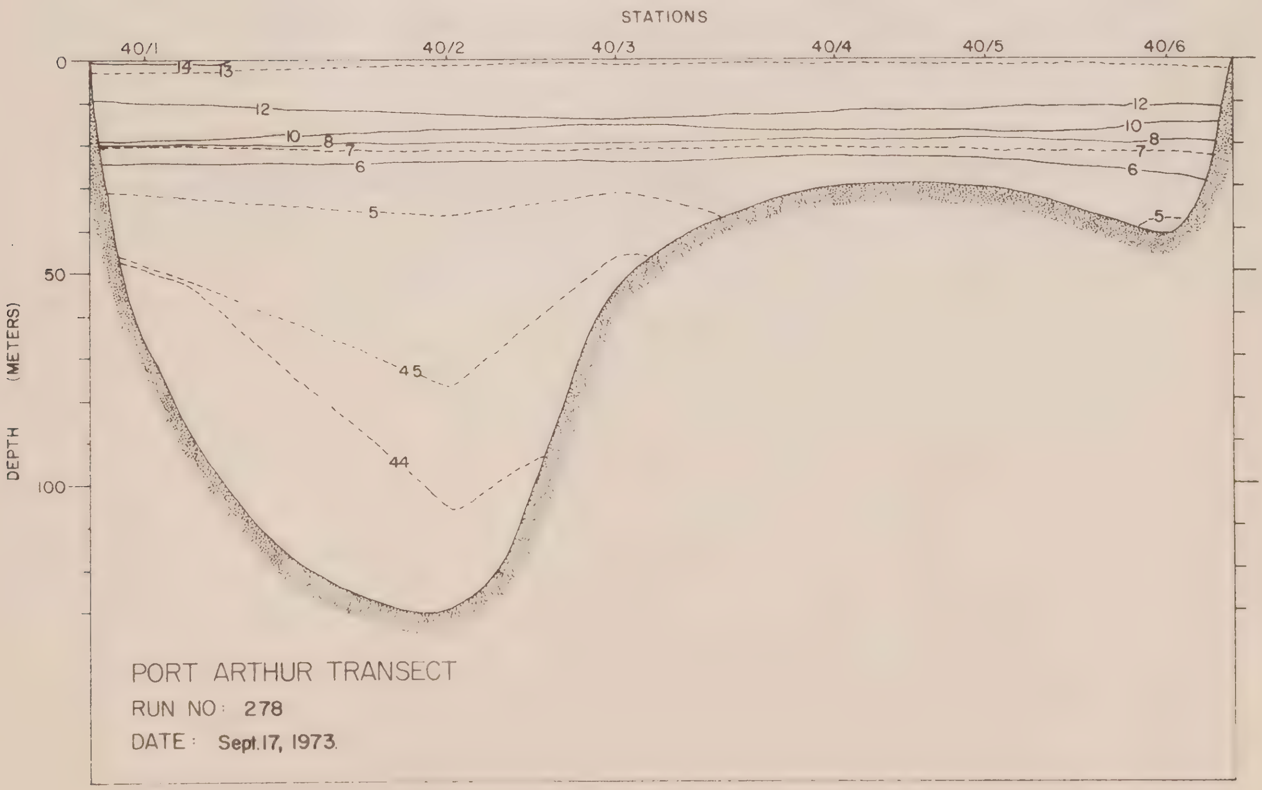

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
16
14
12
10
8
7
6
5
4.5
4.5
PORT ARTHUR TRANSECT
RUN NO: 236
DATE: Aug. 6, 1973.

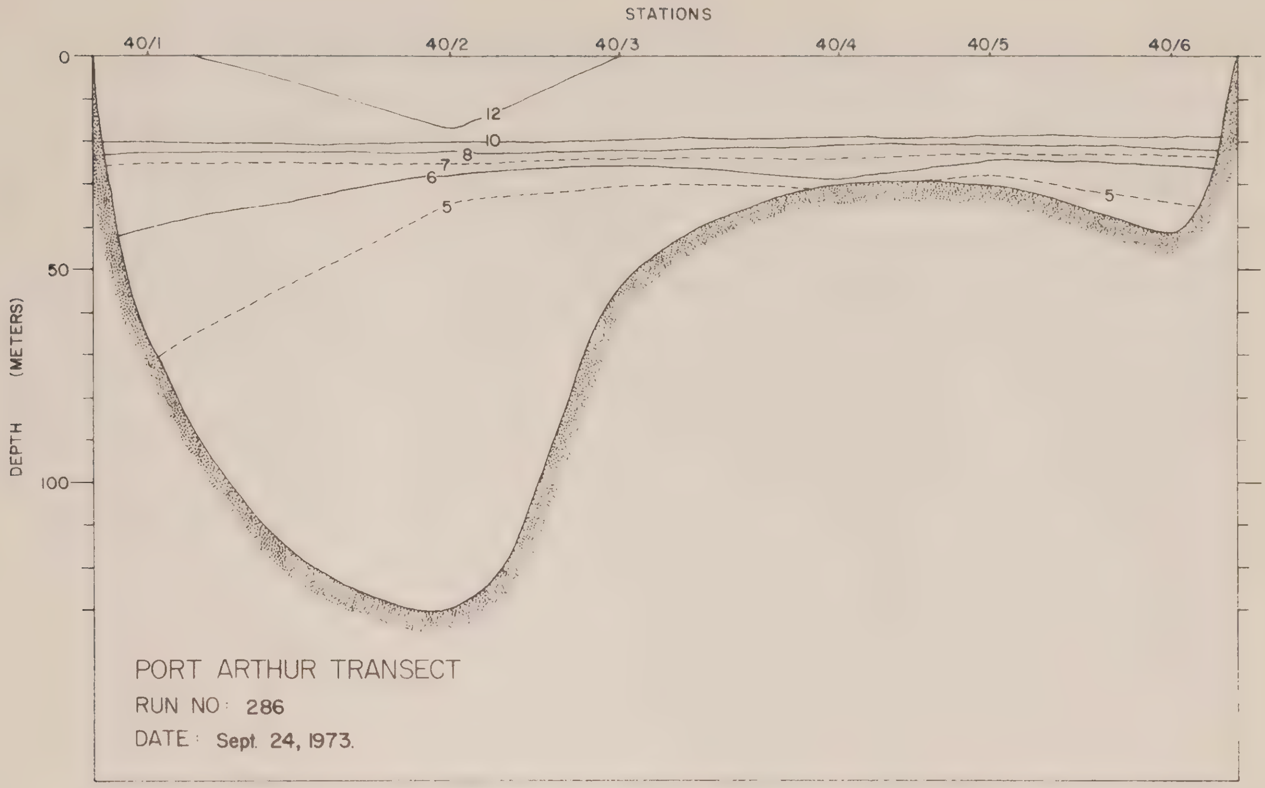

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
16
16
14
12
10
8
7
6
5
5
4.5
PORT ARTHUR TRANSECT
RUN NO: 248
DATE: Aug. 20, 1973.

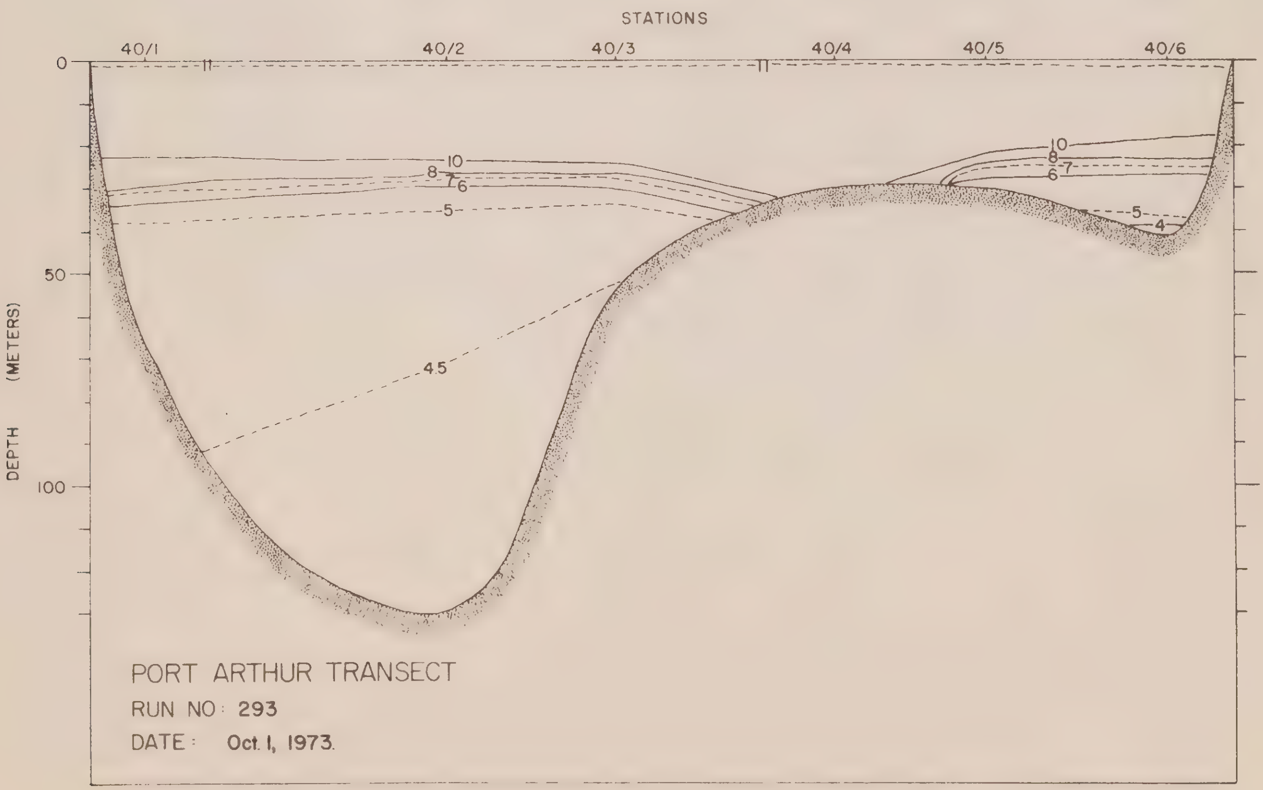

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
14
12
10
8
7
6
5
4.5
PORT ARTHUR TRANSECT
RUN NO: 256
DATE: Aug. 27, 1973.

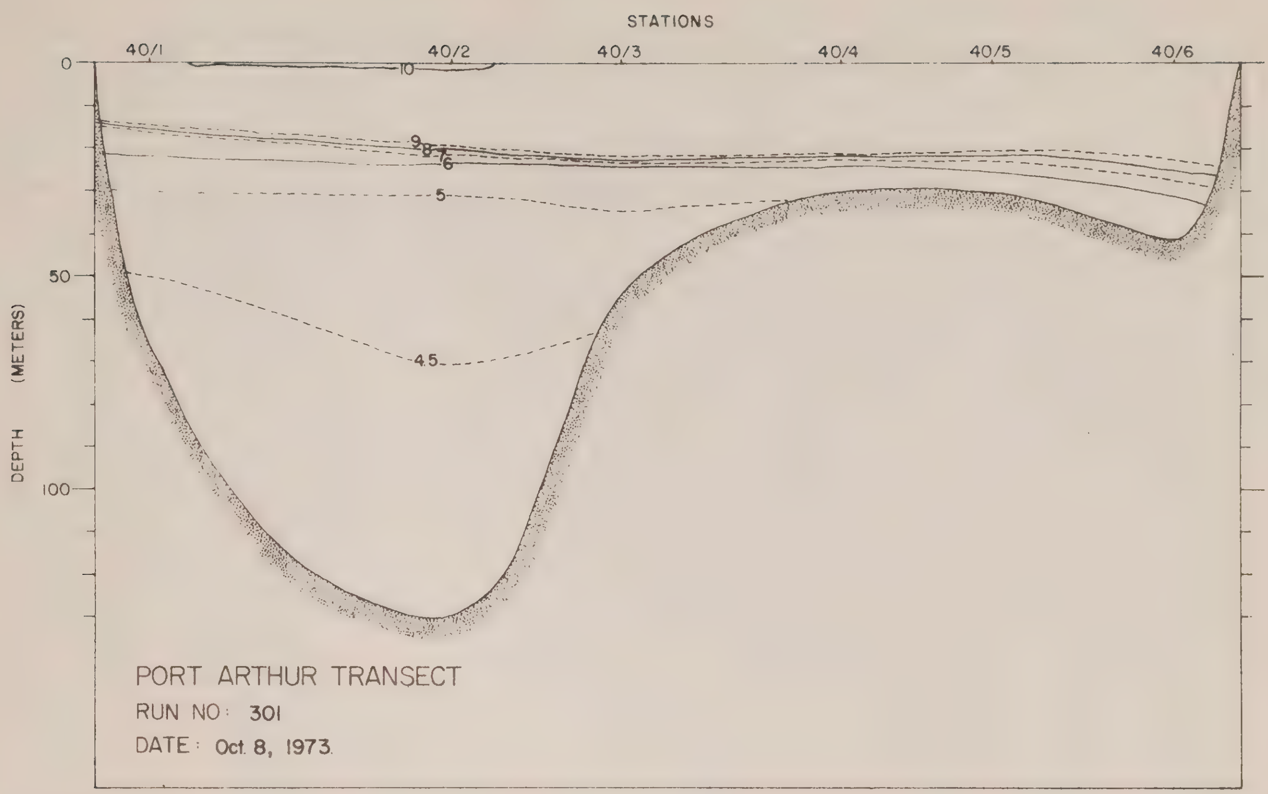

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
13
12
10
8
7
6
5
4.5
PORT ARTHUR TRANSECT
RUN NO: 264
DATE: Sept. 6, 1973.

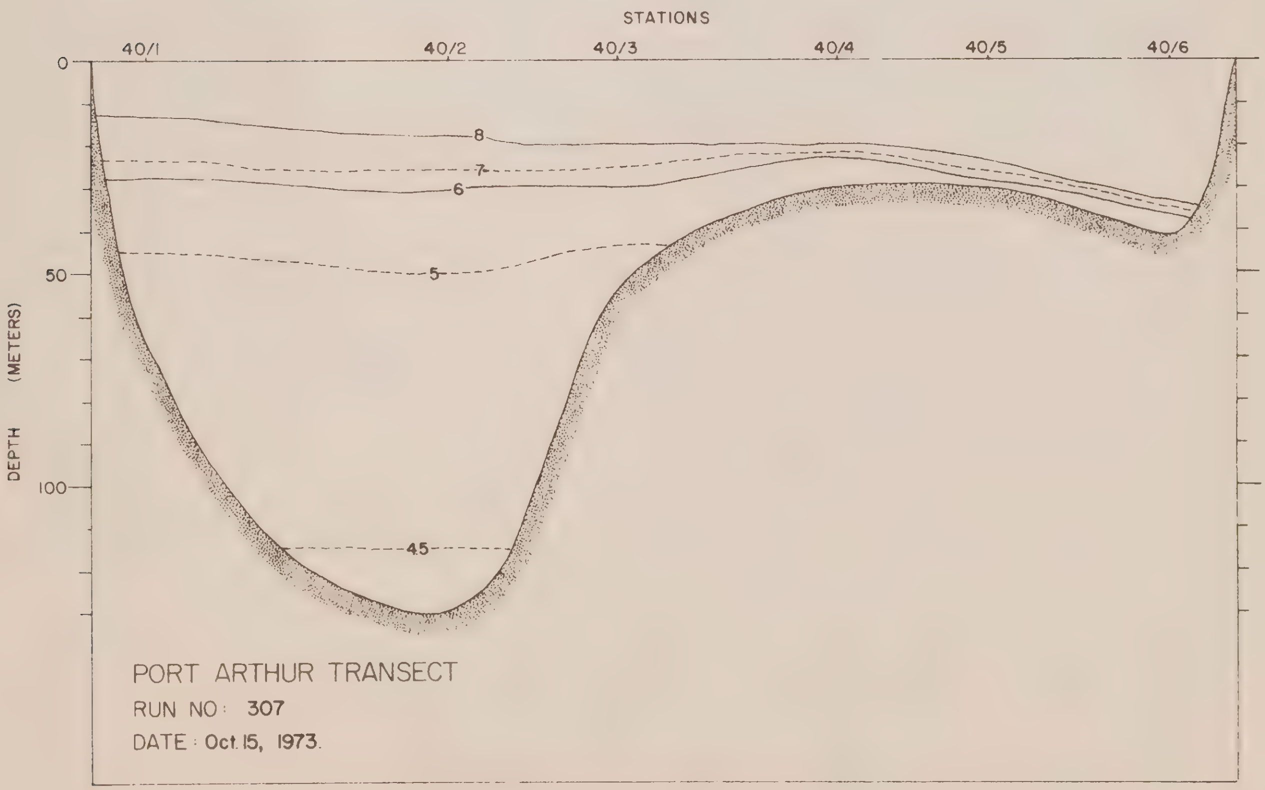

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
13
12
10
8
7
6
5
5
4.5
PORT ARTHUR TRANSECT
RUN NO: 272
DATE: Sept. 13, 1973.

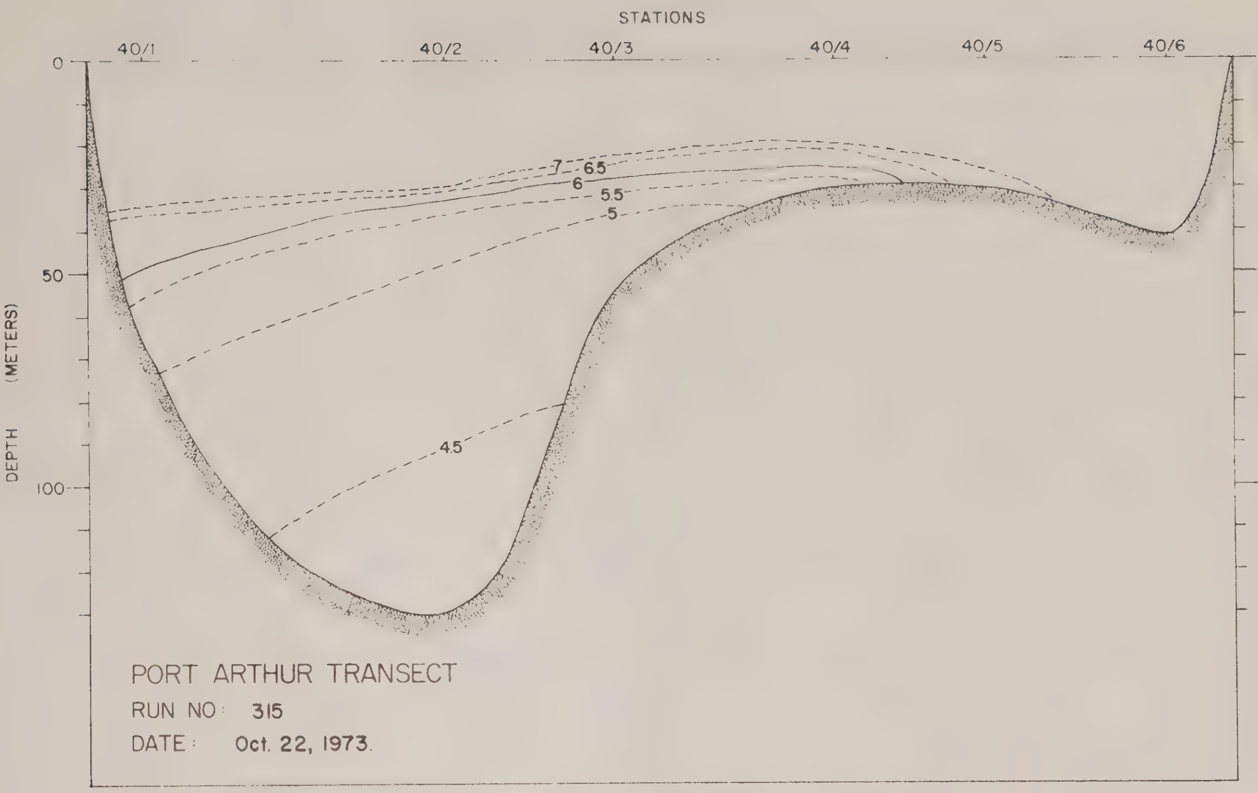

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
14
13
12
12
10
10
8
8
7
7
6
6
5
5
4.5
44
PORT ARTHUR TRANSECT
RUN NO: 278
DATE: Sept.17, 1973.


STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
12
10
8
7
6
5
5
PORT ARTHUR TRANSECT
RUN NO: 286
DATE: Sept. 24, 1973.

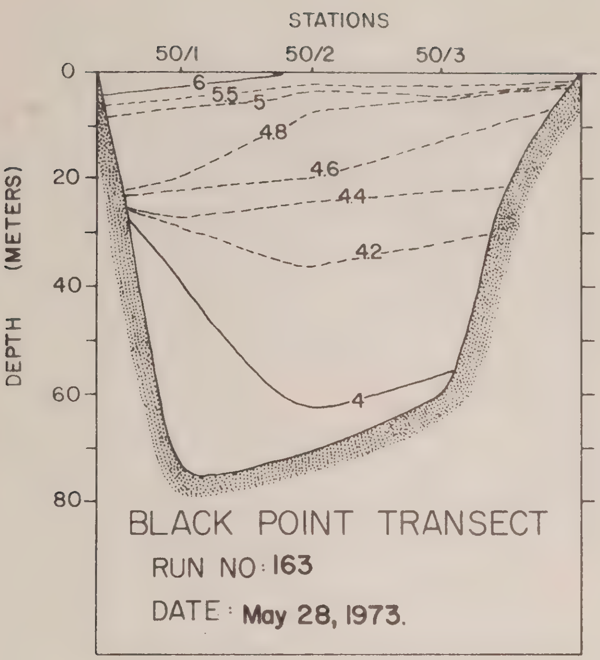

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
11
11
10
8
7
6
5
10
8
7
6
5
4
4.5
PORT ARTHUR TRANSECT
RUN NO: 293
DATE: Oct. 1, 1973.

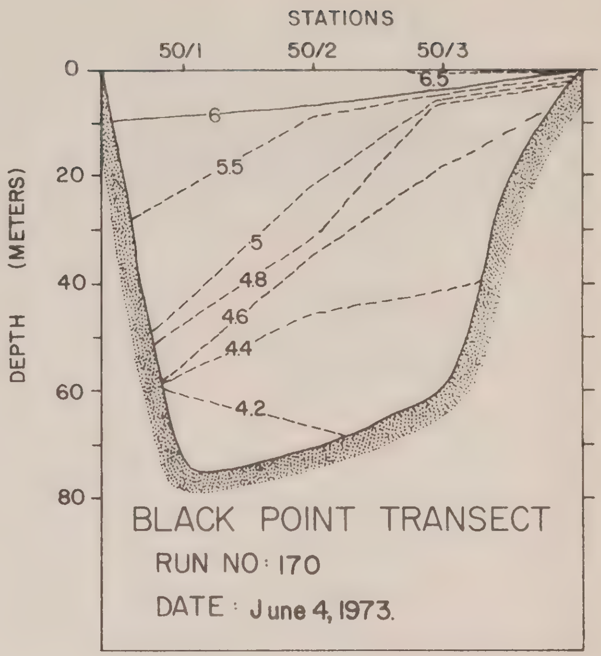

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
10
9
8
7
6
5
4.5
PORT ARTHUR TRANSECT
RUN NO: 301
DATE: Oct. 8, 1973.

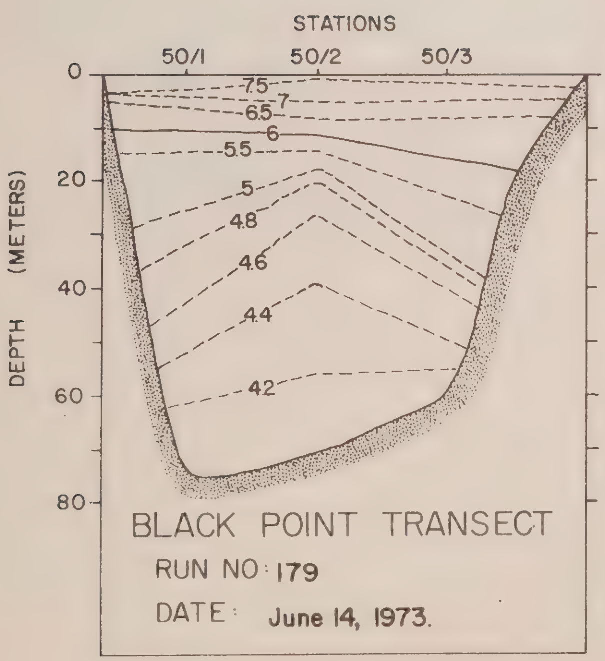

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
8
7
6
5
4.5
PORT ARTHUR TRANSECT
RUN NO: 307
DATE: Oct. 15, 1973.

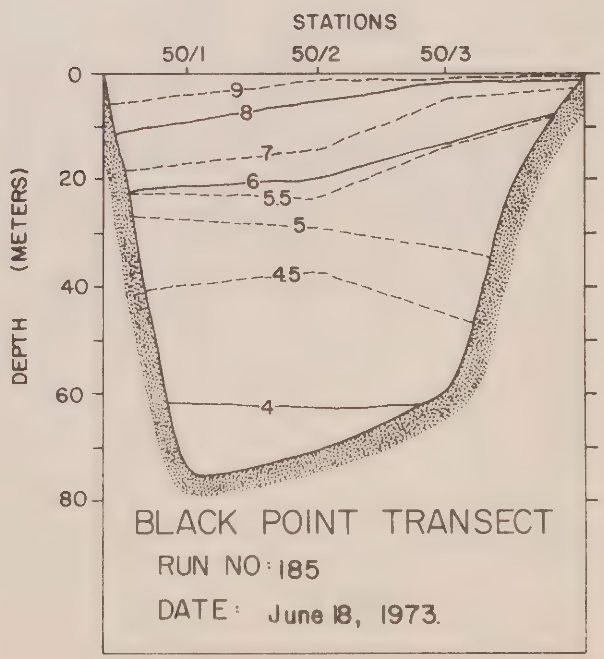

STATIONS
40/1
40/2
40/3
40/4
40/5
40/6
0
50
100
DEPTH (METERS)
7
6.5
6
5.5
5
4.5
PORT ARTHUR TRANSECT
RUN NO: 315
DATE: Oct. 22, 1973.

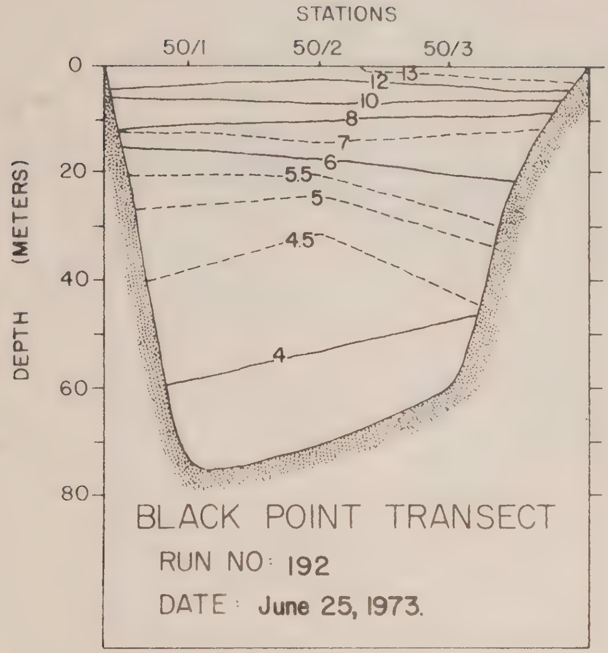
BLACK POINT TRANSECT (MAY 22 - OCTOBER 22)

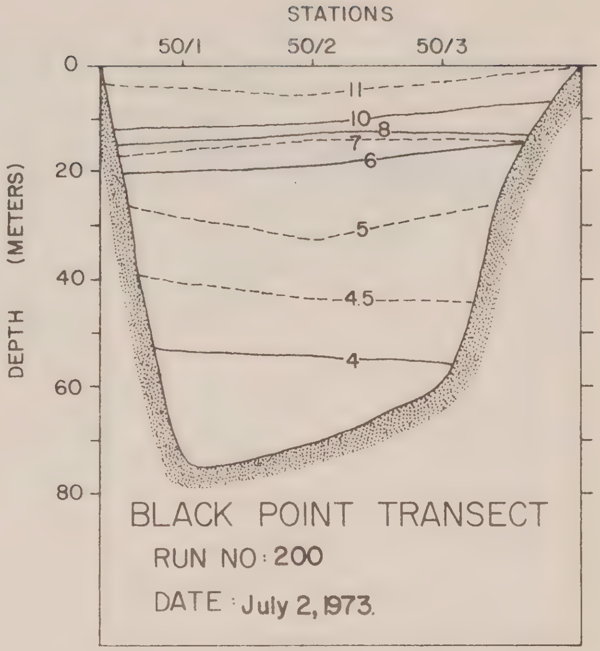

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
6
5.5
5
4.8
4.6
4.4
4.2
4
BLACK POINT TRANSECT
RUN NO: 163
DATE: May 28, 1973.

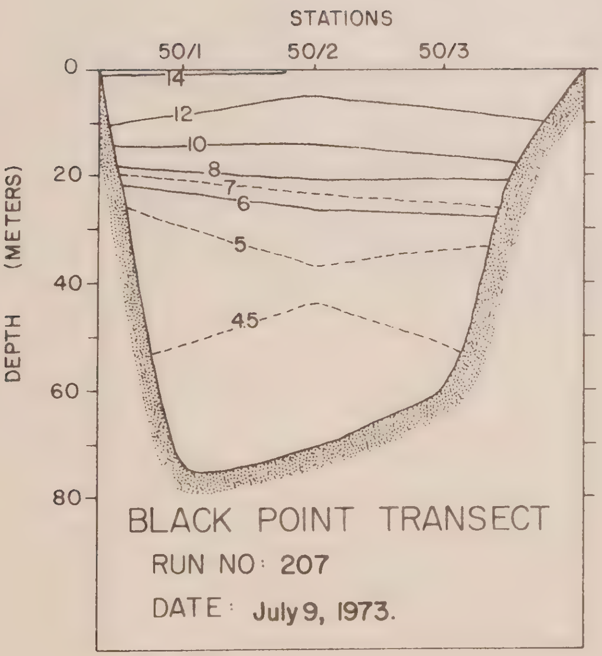

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
6.5
6
5.5
5
4.8
4.6
4.4
4.2
BLACK POINT TRANSECT
RUN NO: 170
DATE: June 4, 1973.

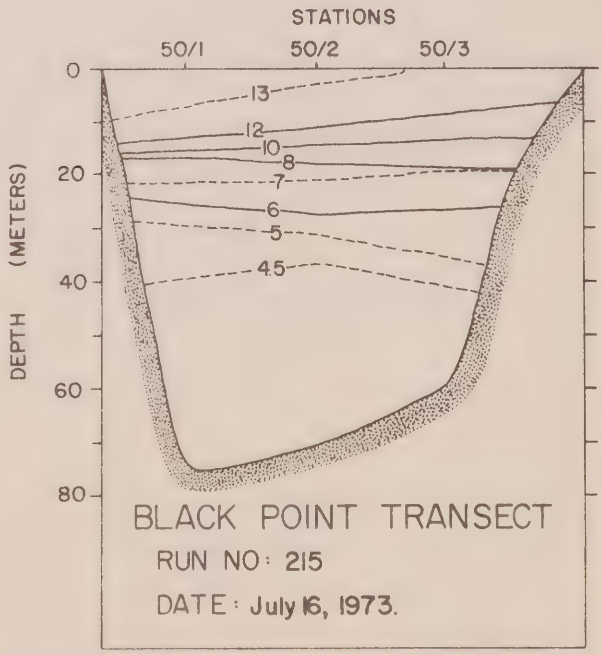

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
7.5
7
6.5
6
5.5
5
4.8
4.6
4.4
4.2
BLACK POINT TRANSECT
RUN NO: 179
DATE: June 14, 1973.

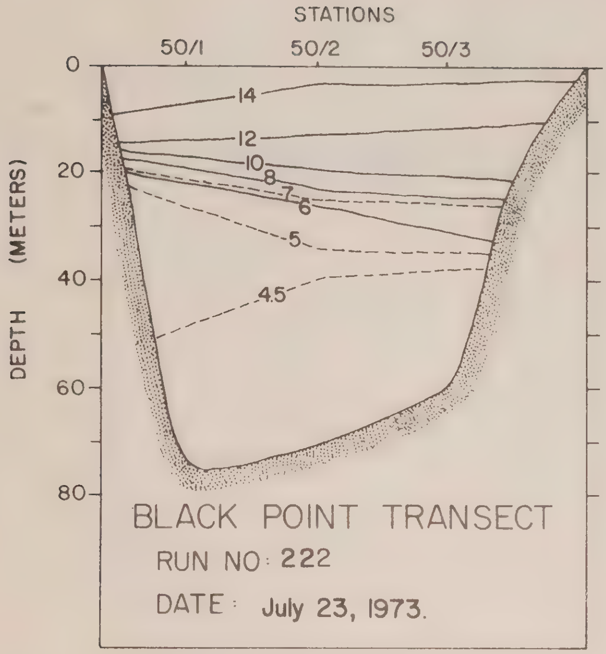

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
9
8
7
6
5.5
5
4.5
4
BLACK POINT TRANSECT
RUN NO: 185
DATE: June 18, 1973.

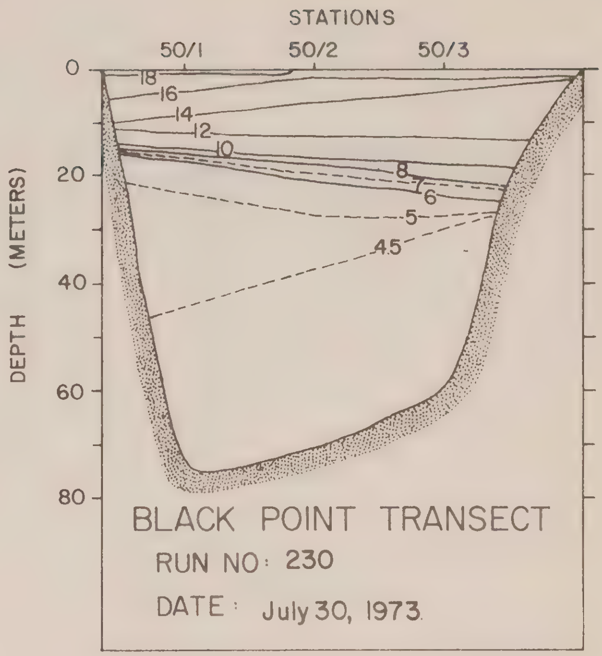

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
13
12
10
8
7
6
5.5
5
4.5
4
BLACK POINT TRANSECT
RUN NO: 192
DATE: June 25, 1973.

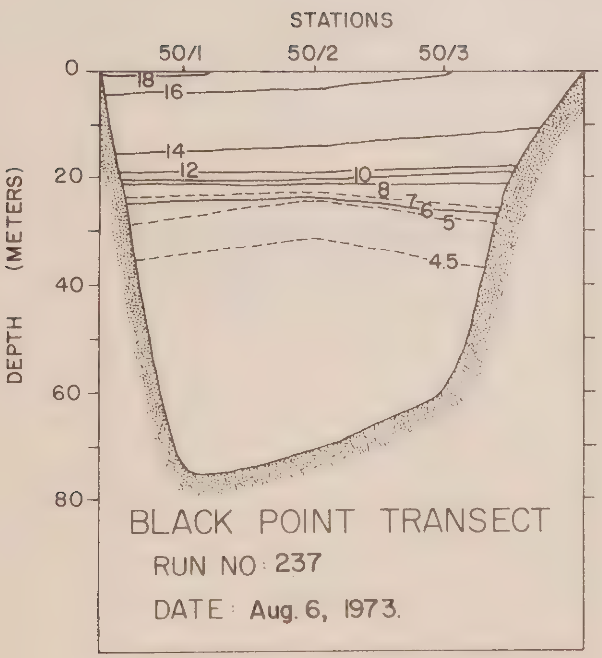

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
11
10
8
7
6
5
4.5
4
BLACK POINT TRANSECT
RUN NO: 200
DATE: July 2, 1973.

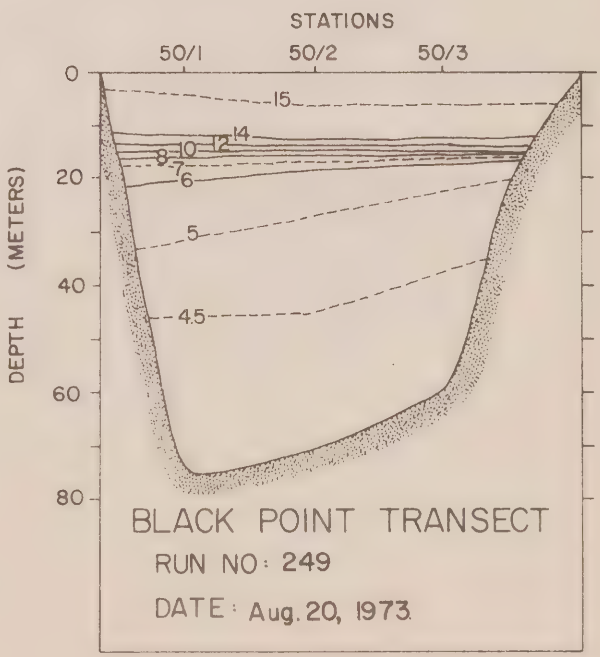

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
14
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 207
DATE: July 9, 1973.

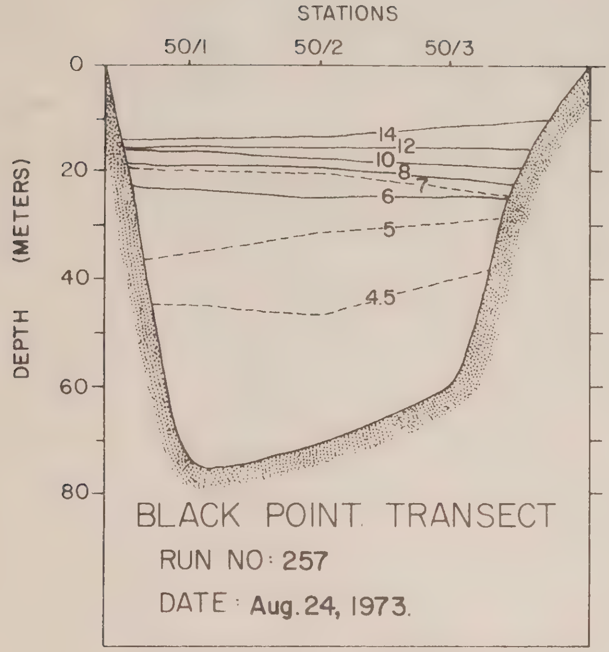

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
13
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 215
DATE: July 16, 1973.

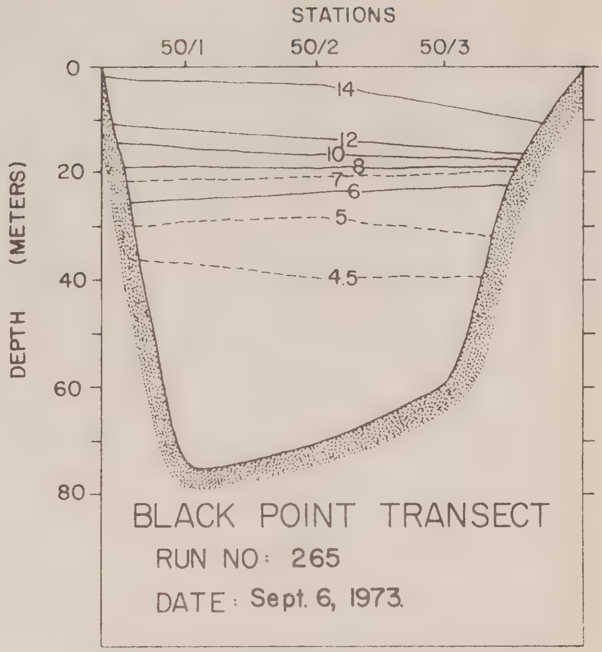

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
14
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 222
DATE: July 23, 1973.

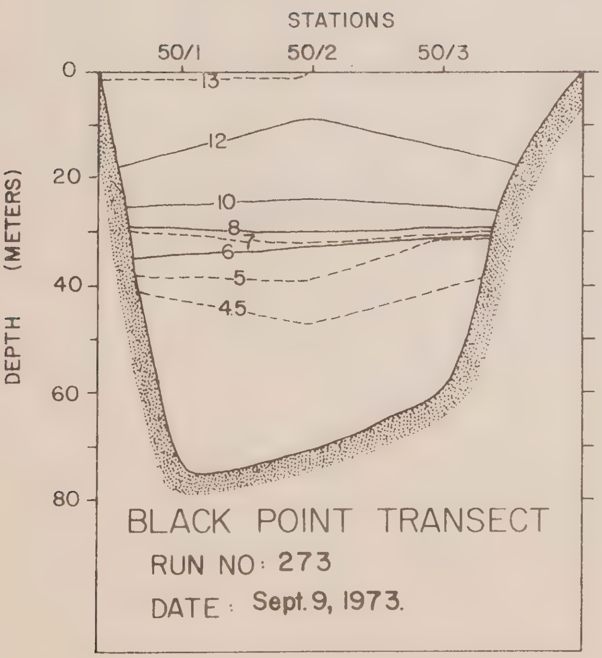

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
18
16
14
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 230
DATE: July 30, 1973.

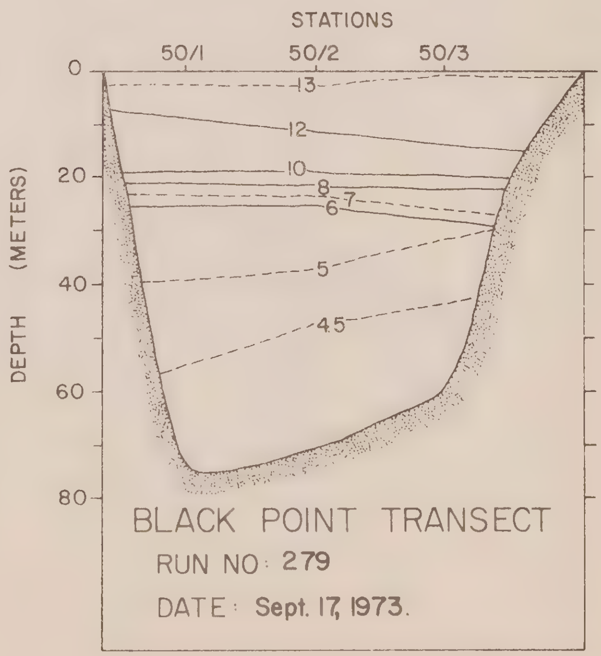

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
18
16
14
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 237
DATE: Aug. 6, 1973.

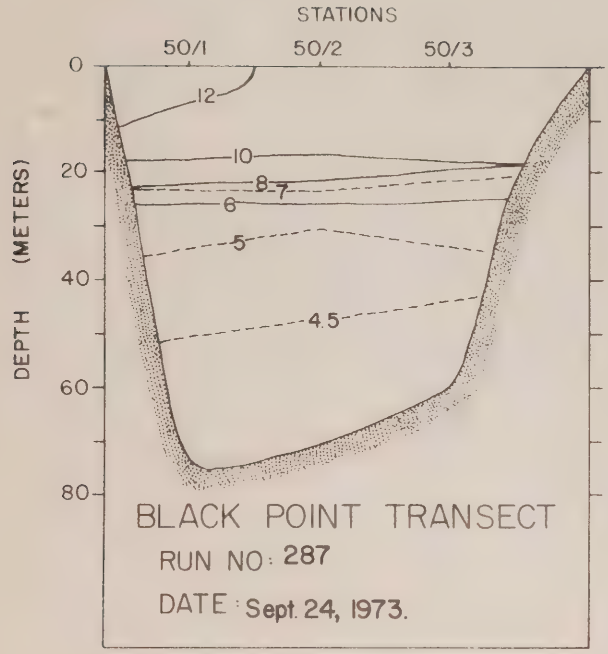

STATIONS
50/1
50/2
50/3
DEPTH (METERS)
0
20
40
60
80
15
14
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 249
DATE: Aug. 20, 1973.

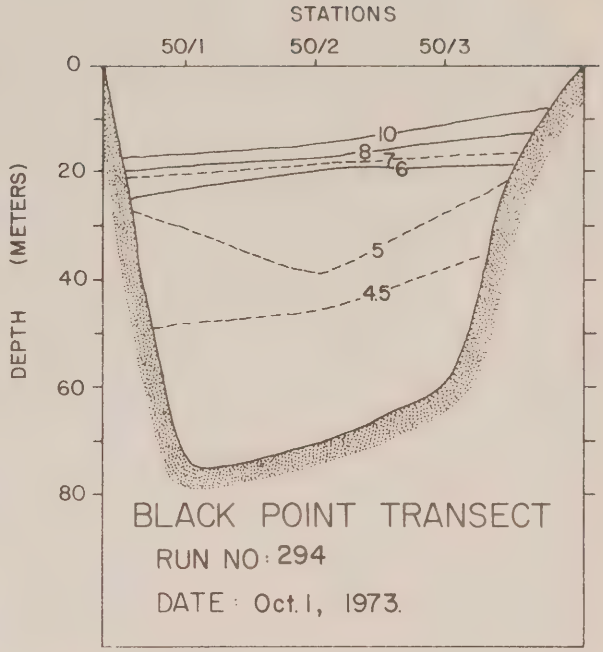

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
14
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 257
DATE: Aug. 24, 1973.

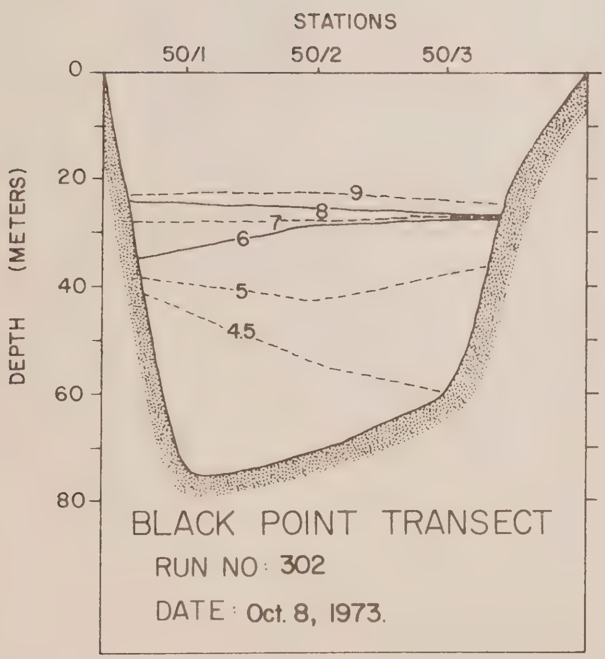

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
14
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 265
DATE: Sept. 6, 1973.

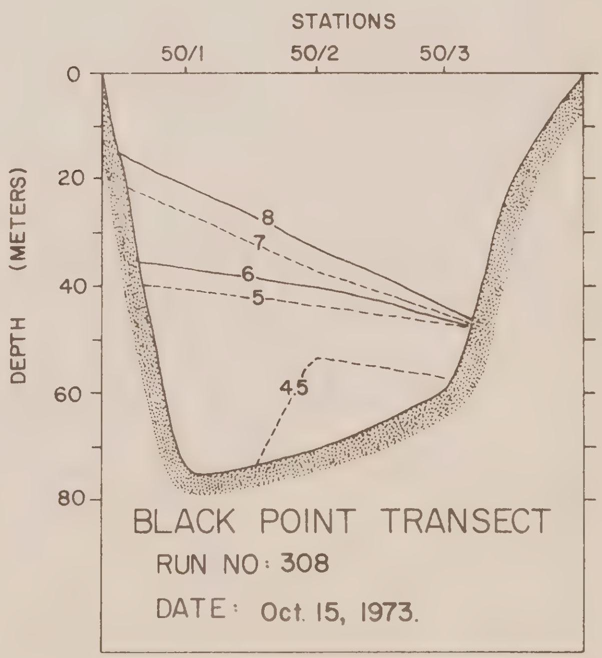

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
13
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 273
DATE: Sept. 9, 1973.

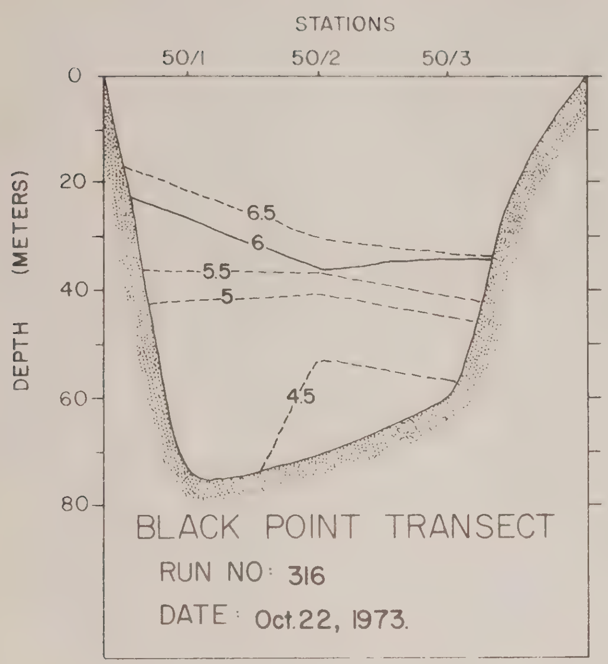

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
13
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 279
DATE: Sept. 17, 1973.


STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
12
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 287
DATE: Sept. 24, 1973.

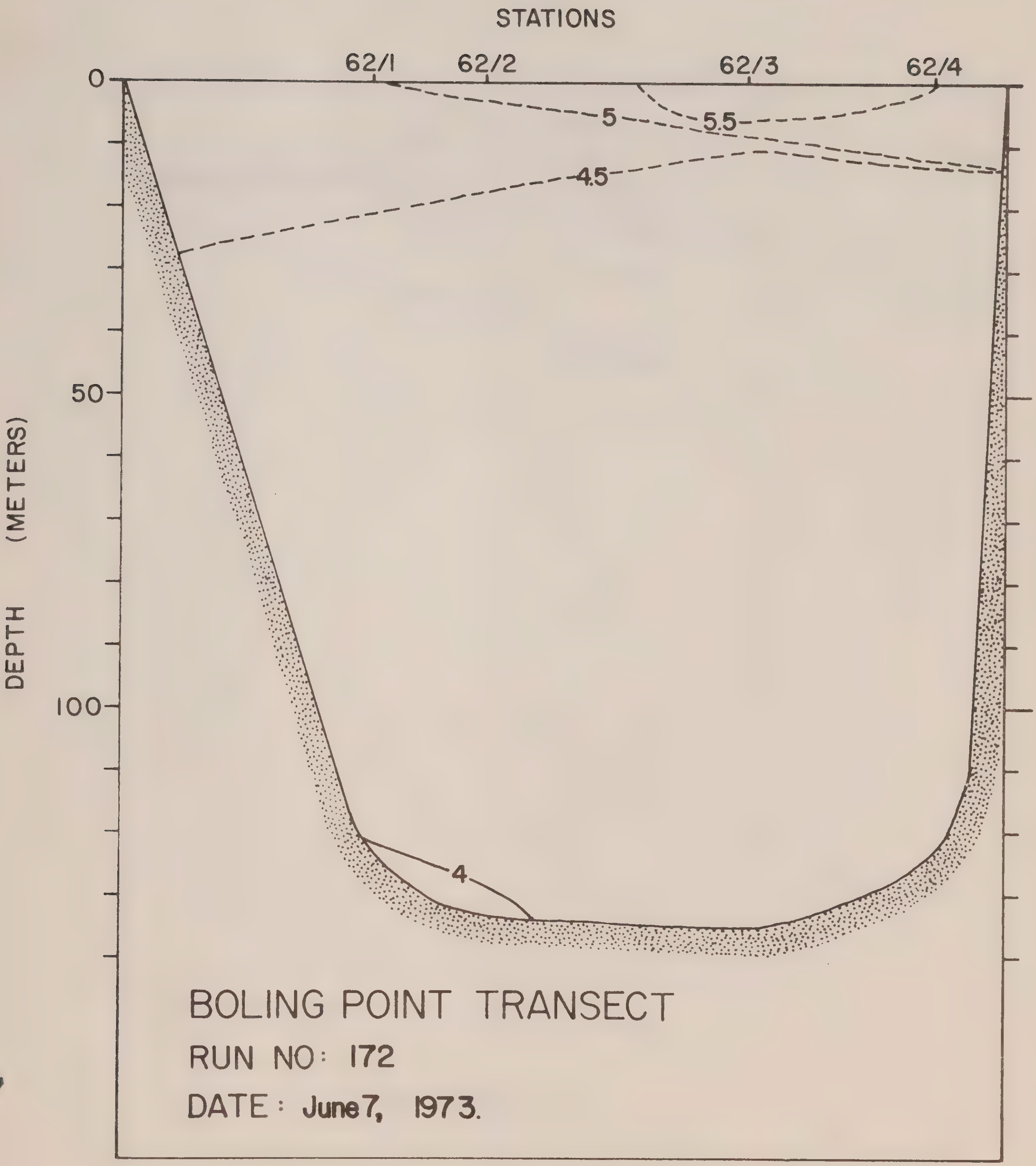

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
10
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 294
DATE: Oct. 1, 1973.

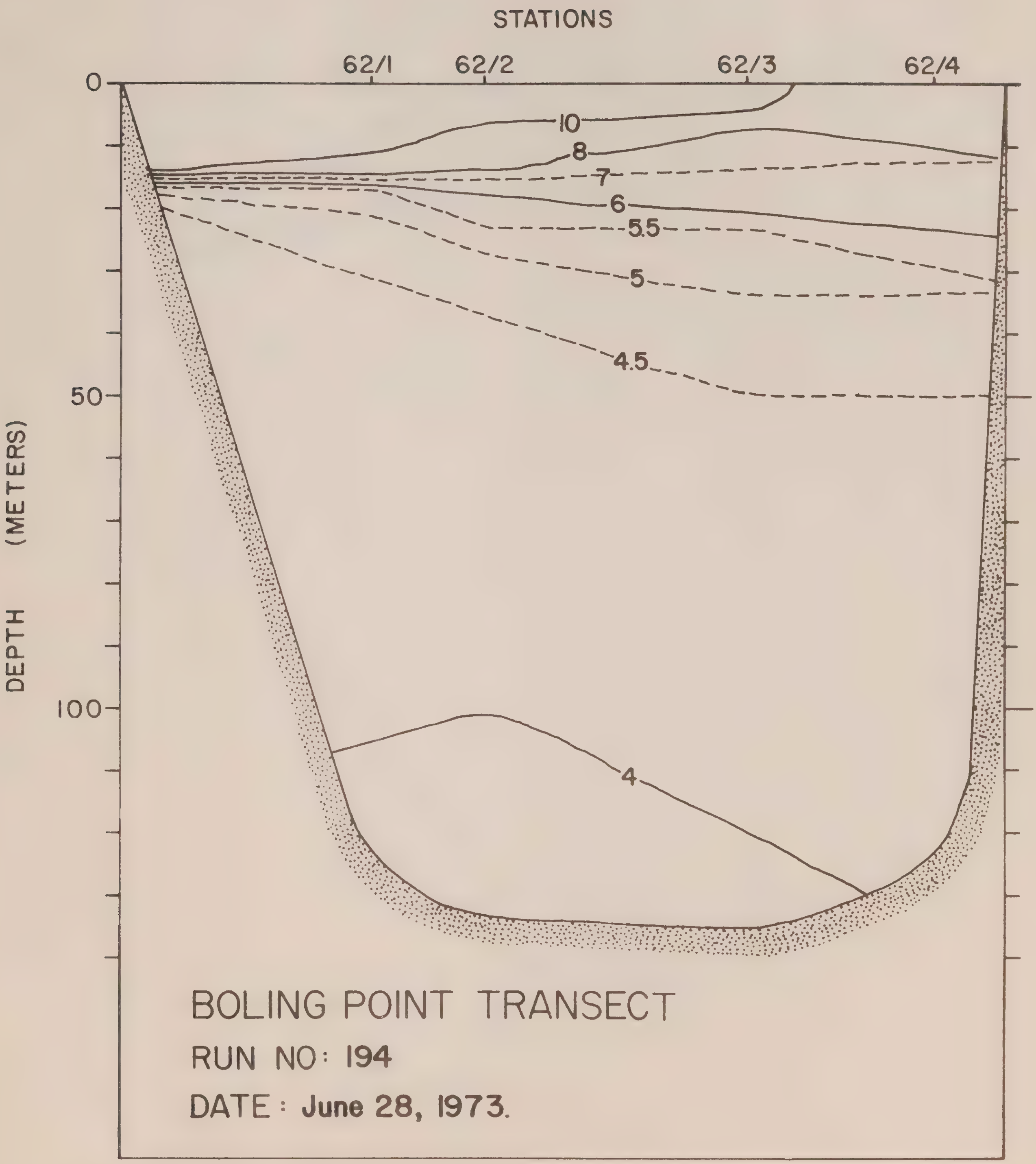

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
9
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 302
DATE: Oct. 8, 1973.

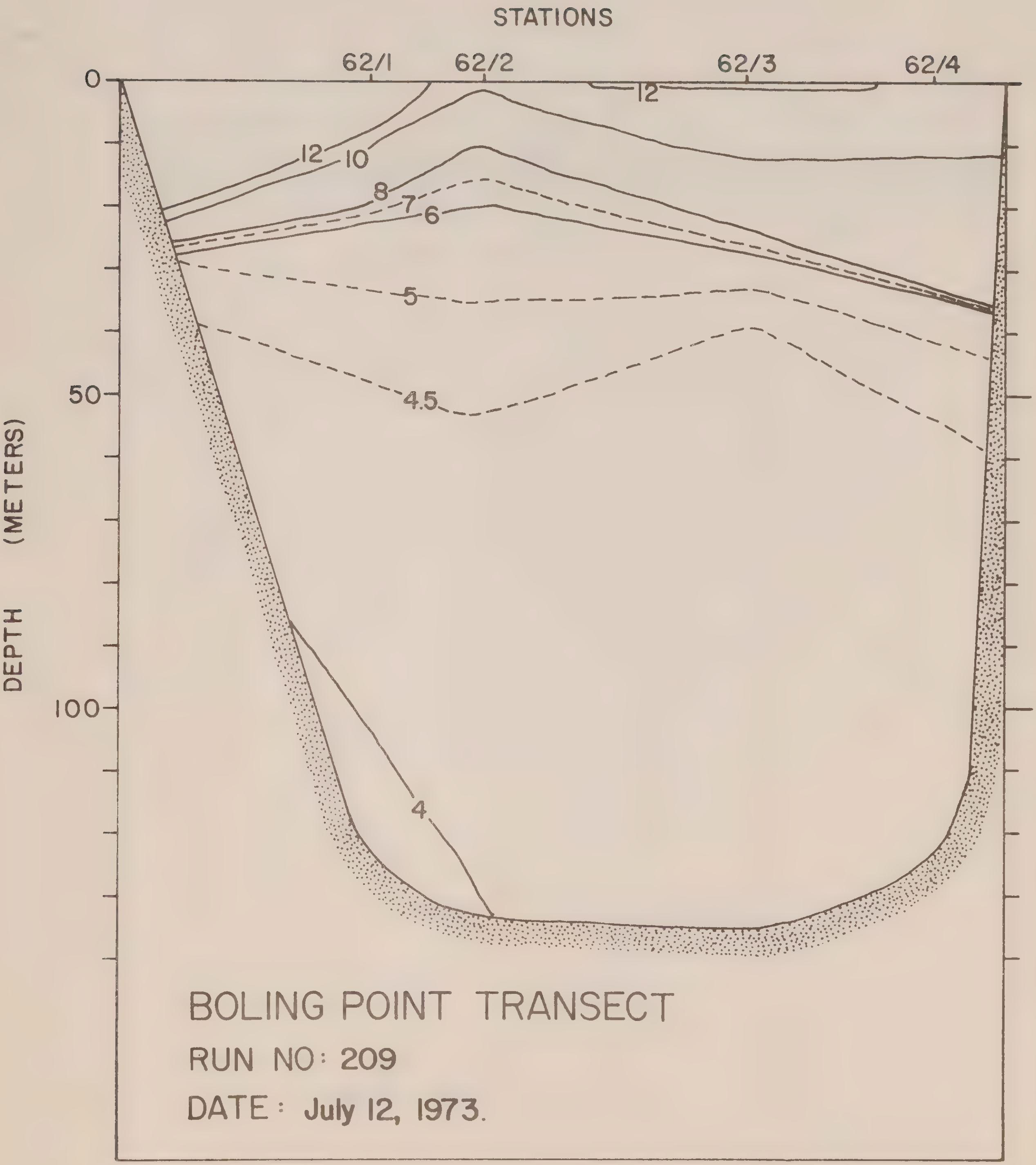

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
8
7
6
5
4.5
BLACK POINT TRANSECT
RUN NO: 308
DATE: Oct. 15, 1973.

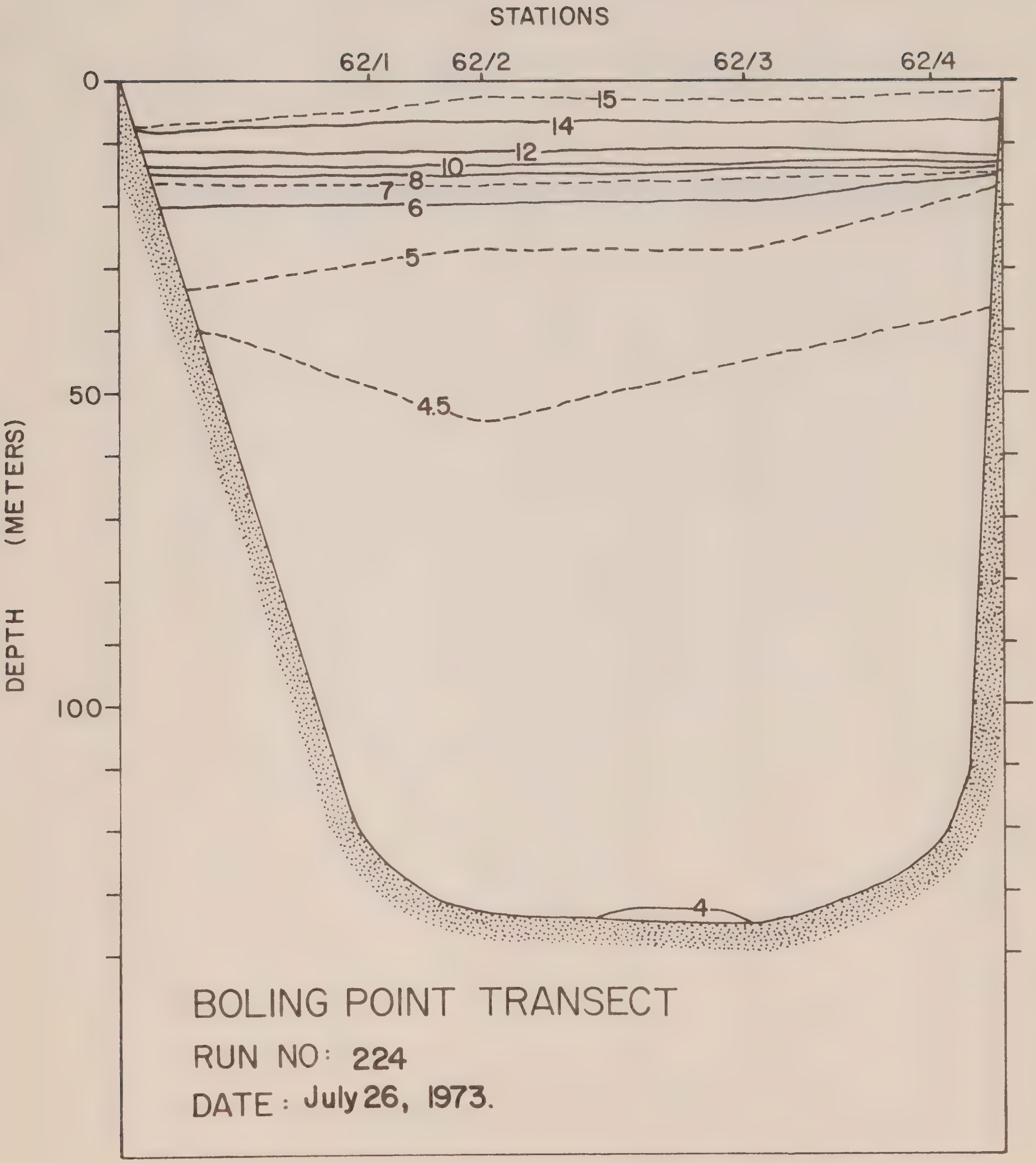

STATIONS
50/1
50/2
50/3
0
20
40
60
80
DEPTH (METERS)
6.5
6
5.5
5
4.5
BLACK POINT TRANSECT
RUN NO: 316
DATE: Oct.22, 1973.

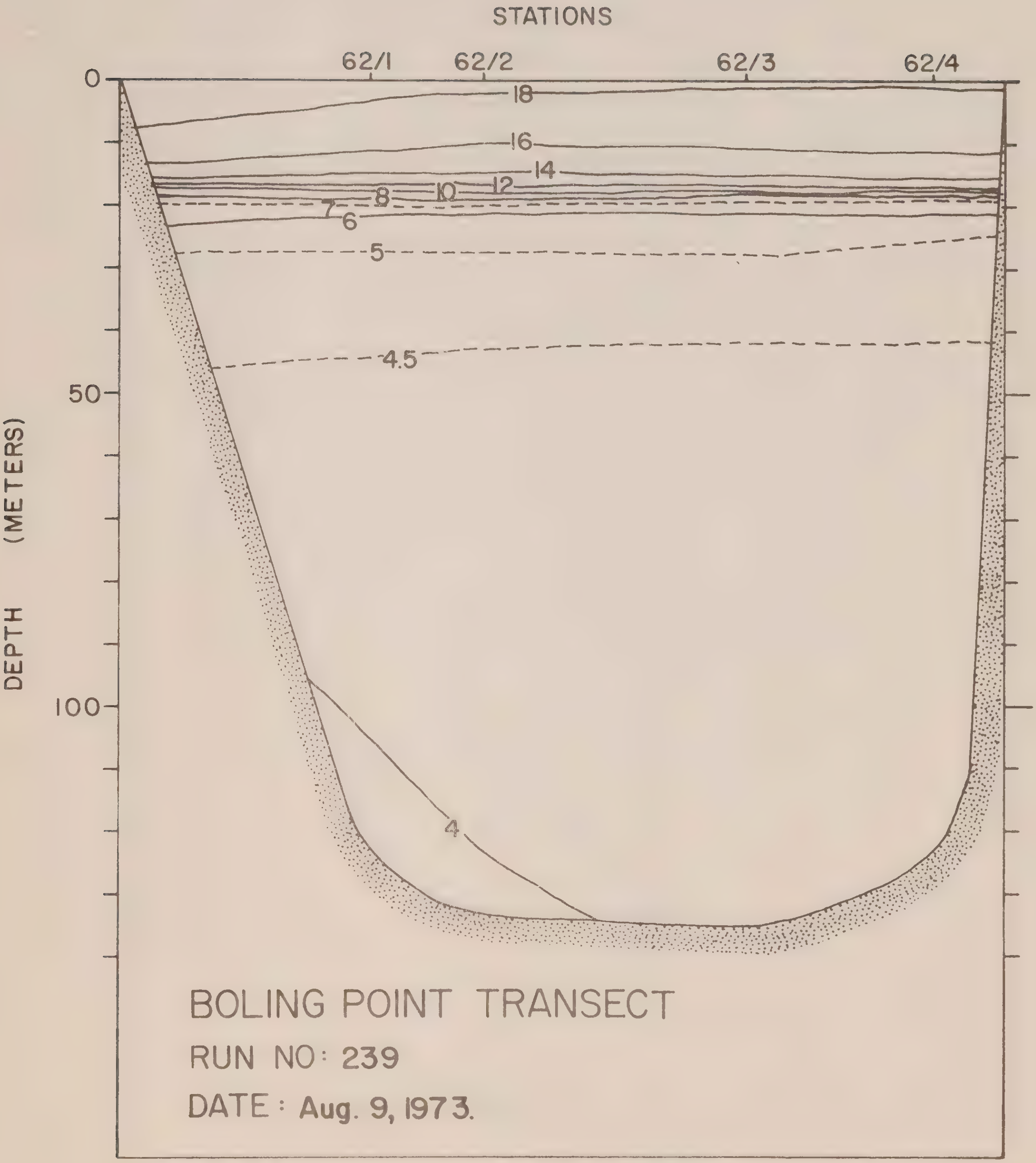
BOLING POINT TRANSECT (JUNE 7 - OCTOBER 19)

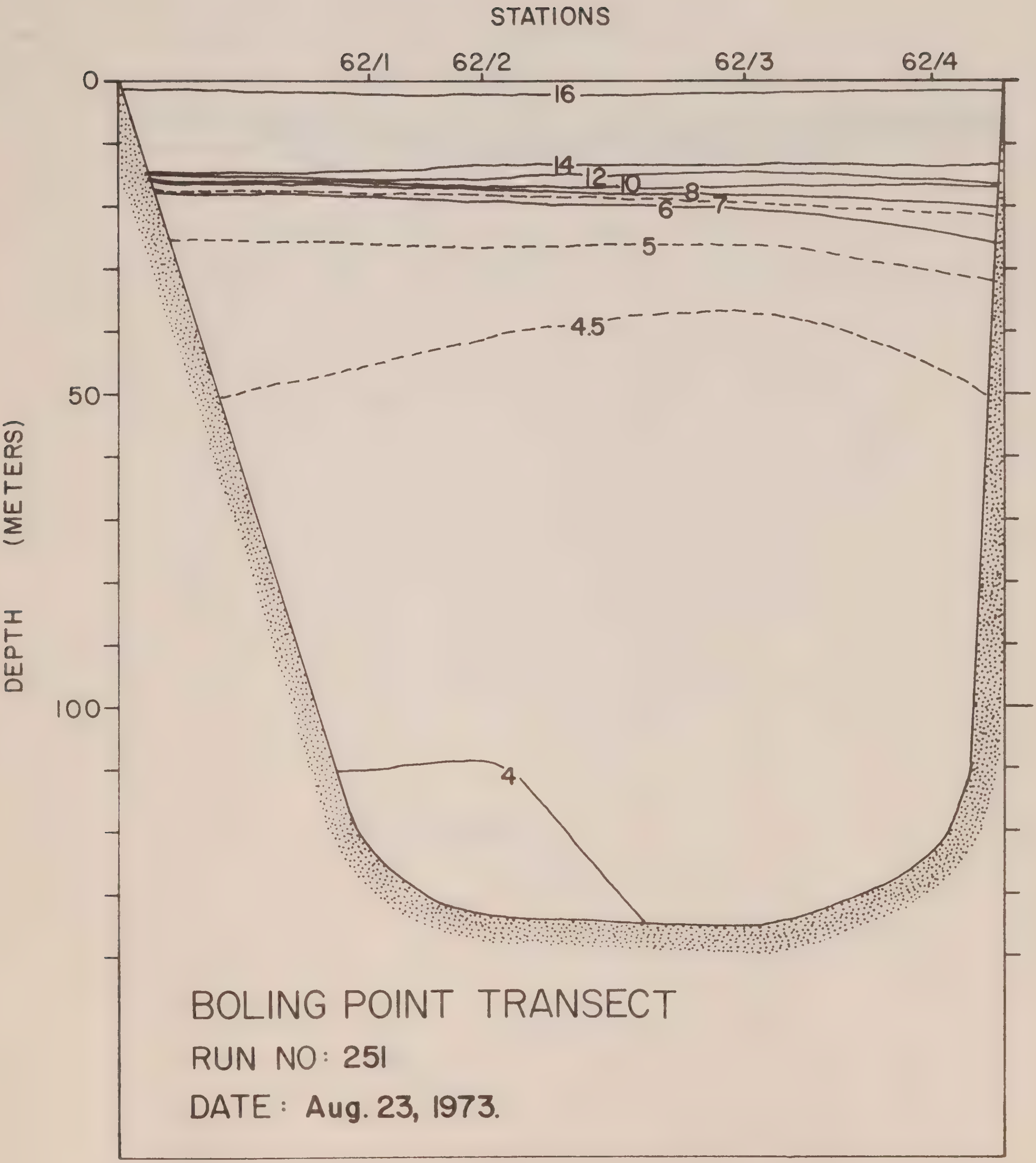

STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
5
5.5
4.5
4
BOLING POINT TRANSECT
RUN NO: 172
DATE: June 7, 1973.

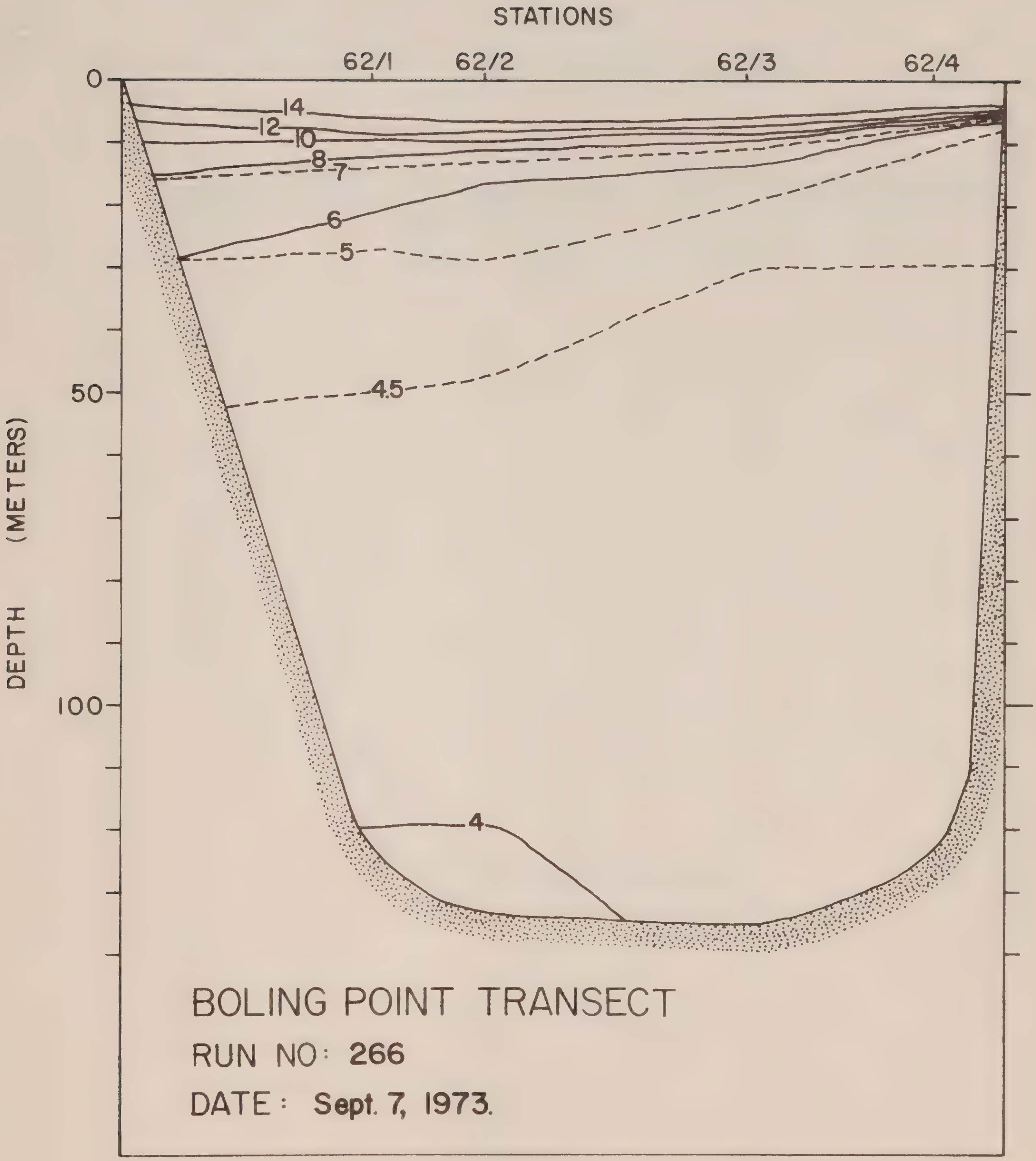

STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
10
8
7
6
5.5
5
4.5
4
BOLING POINT TRANSECT
RUN NO: 194
DATE: June 28, 1973.

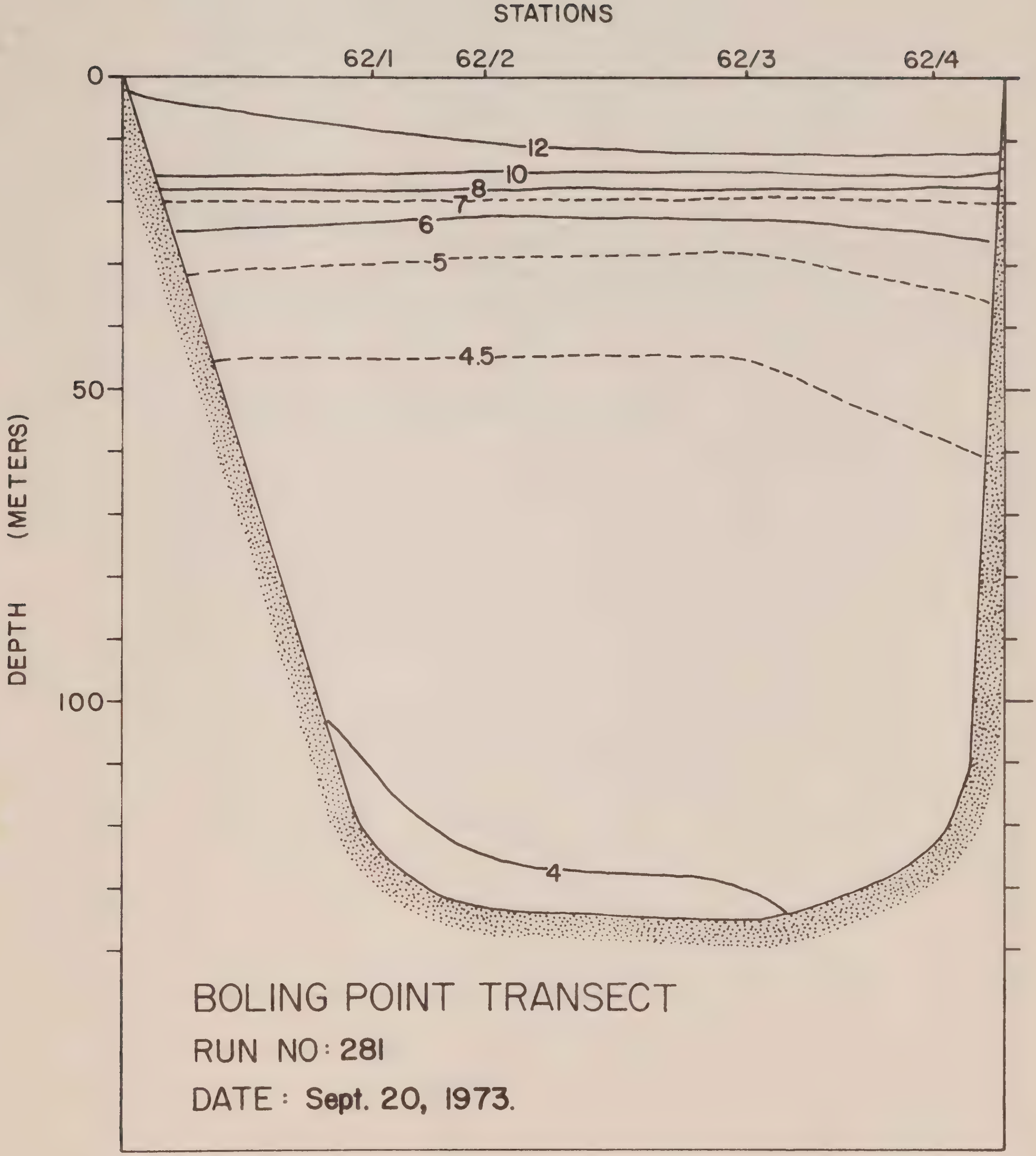

STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
12
12
10
8
7
6
5
4.5
4
BOLING POINT TRANSECT
RUN NO: 209
DATE: July 12, 1973.


STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
15
14
12
10
8
7
6
5
4.5
4
BOLING POINT TRANSECT
RUN NO: 224
DATE: July 26, 1973.

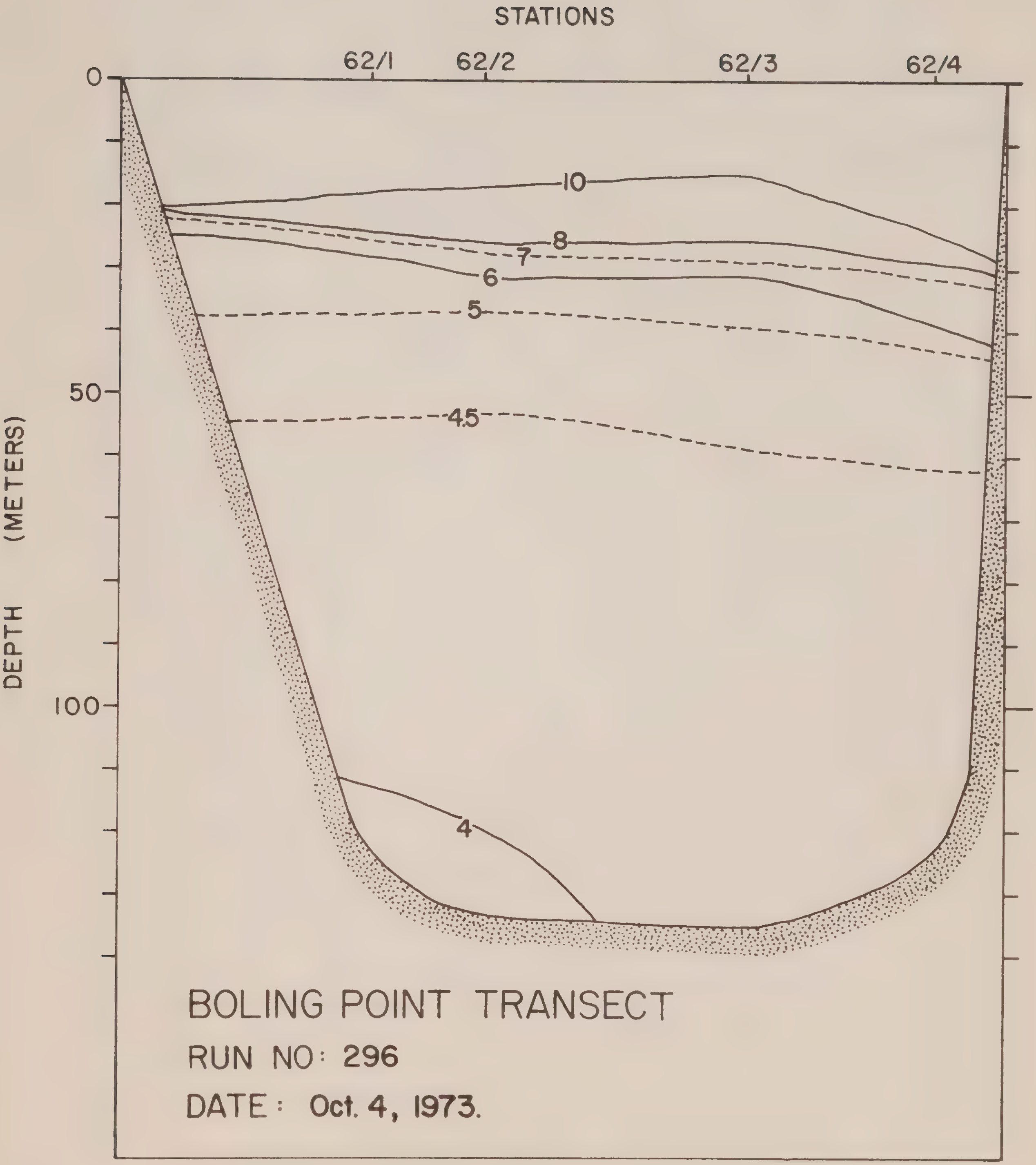

STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
18
16
14
12
10
8
7
6
5
4.5
4
BOLING POINT TRANSECT
RUN NO: 239
DATE: Aug. 9, 1973.

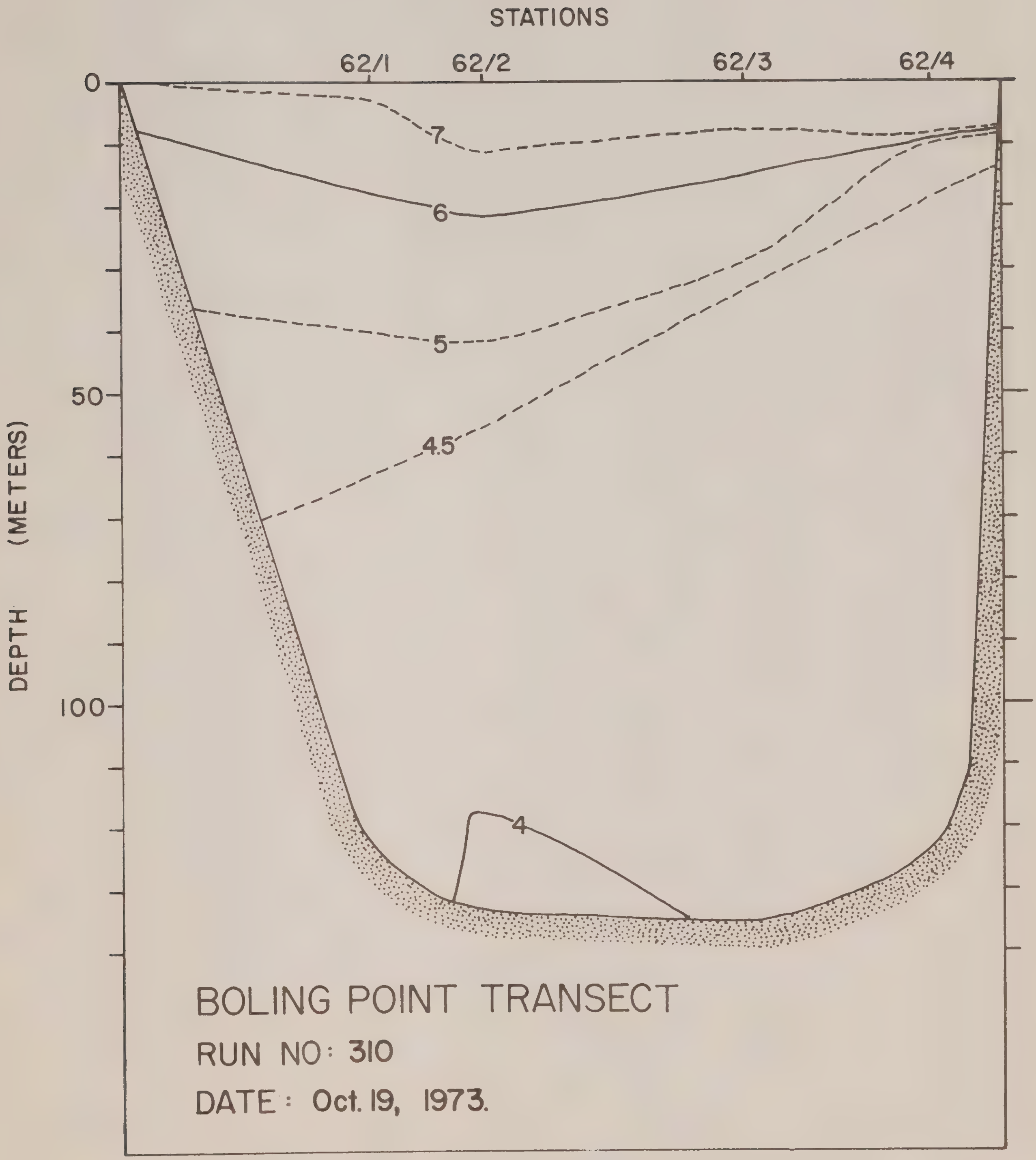

STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
16
14
12
10
8
7
6
5
4.5
4
BOLING POINT TRANSECT
RUN NO: 251
DATE: Aug. 23, 1973.


STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
14
12
10
8
7
6
5
4.5
4
BOLING POINT TRANSECT
RUN NO: 266
DATE: Sept. 7, 1973.

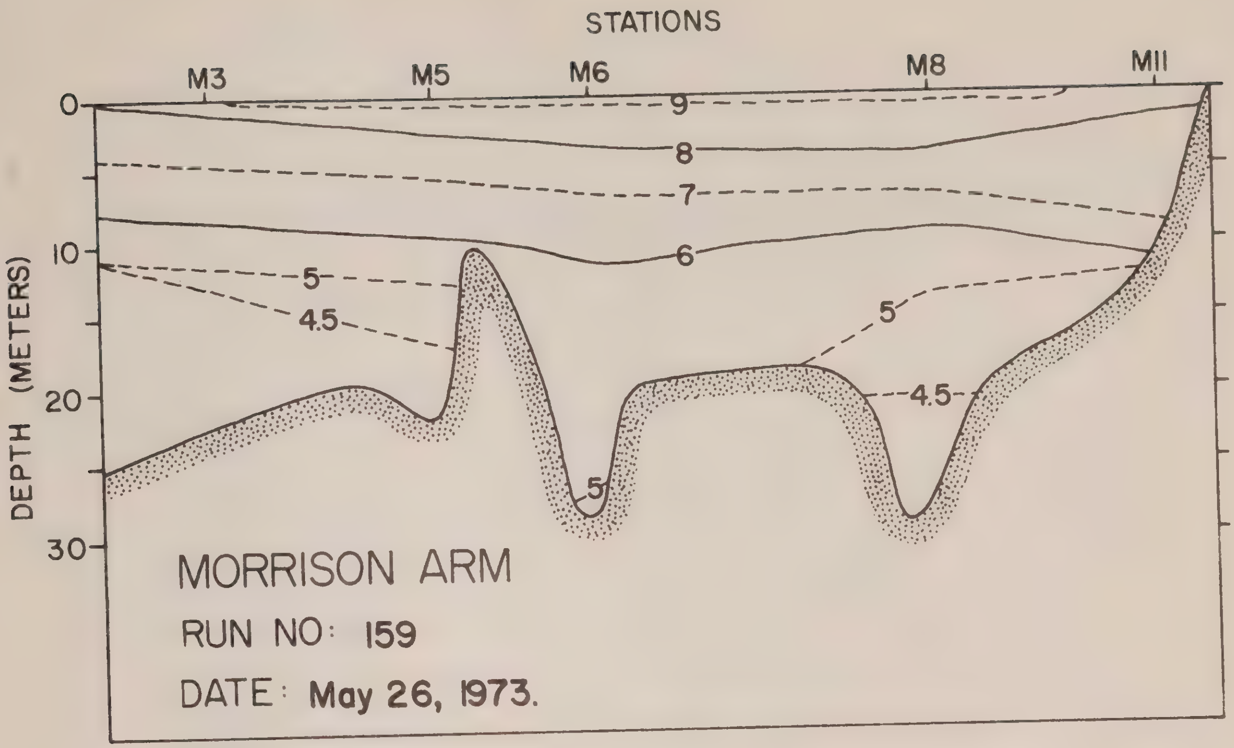


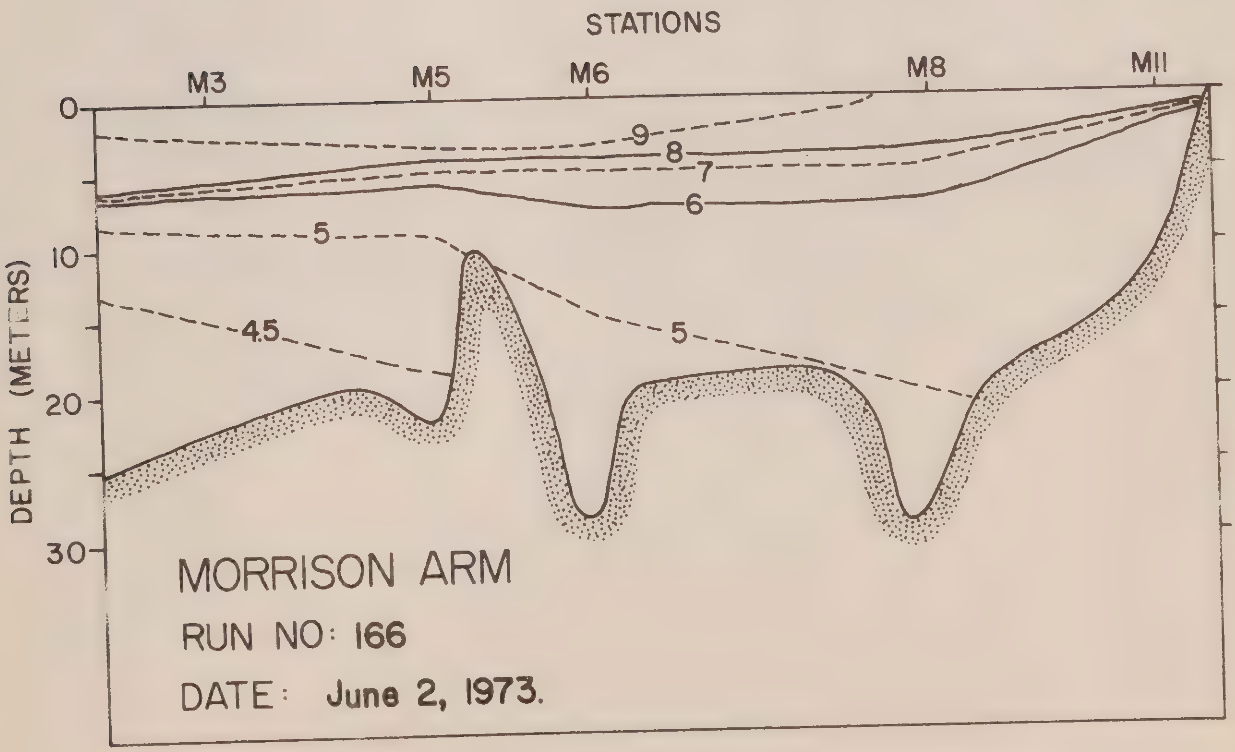
STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
12
10
8
7
6
5
4.5
4
BOLING POINT TRANSECT
RUN NO: 281
DATE: Sept. 20, 1973.

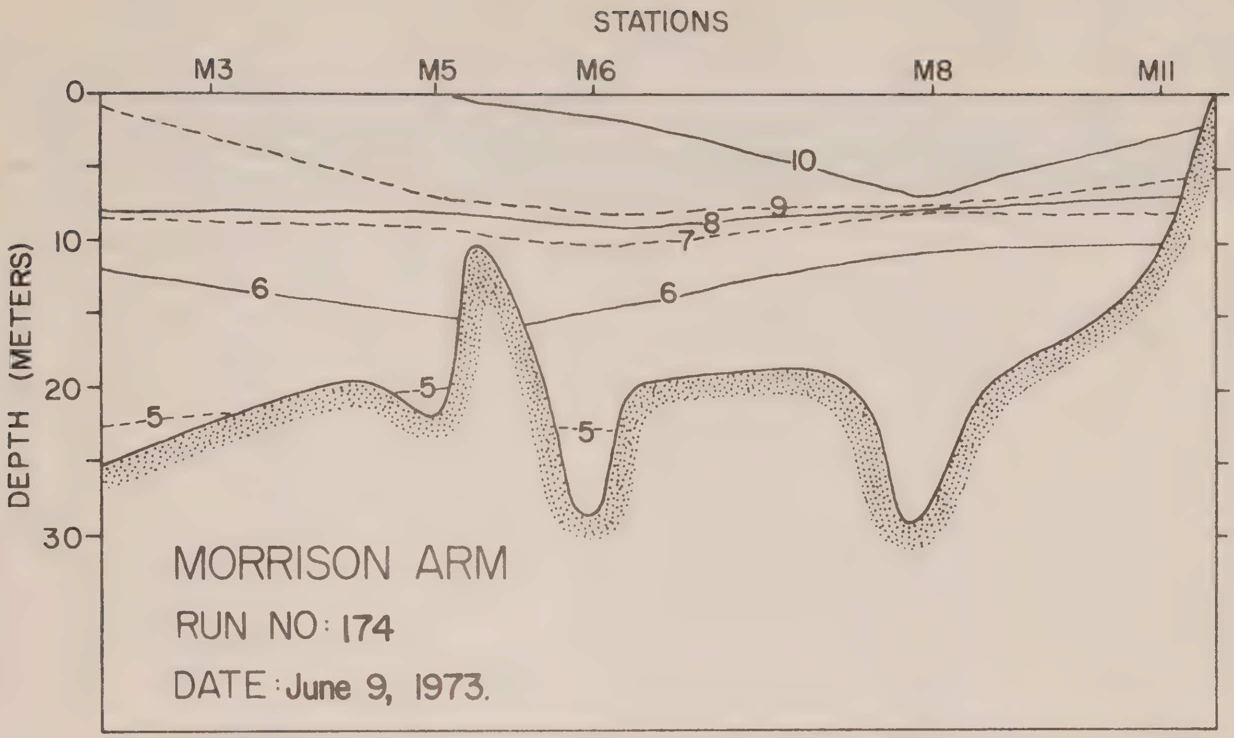

STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
10
8
7
6
5
4.5
4
BOLING POINT TRANSECT
RUN NO: 296
DATE: Oct. 4, 1973.

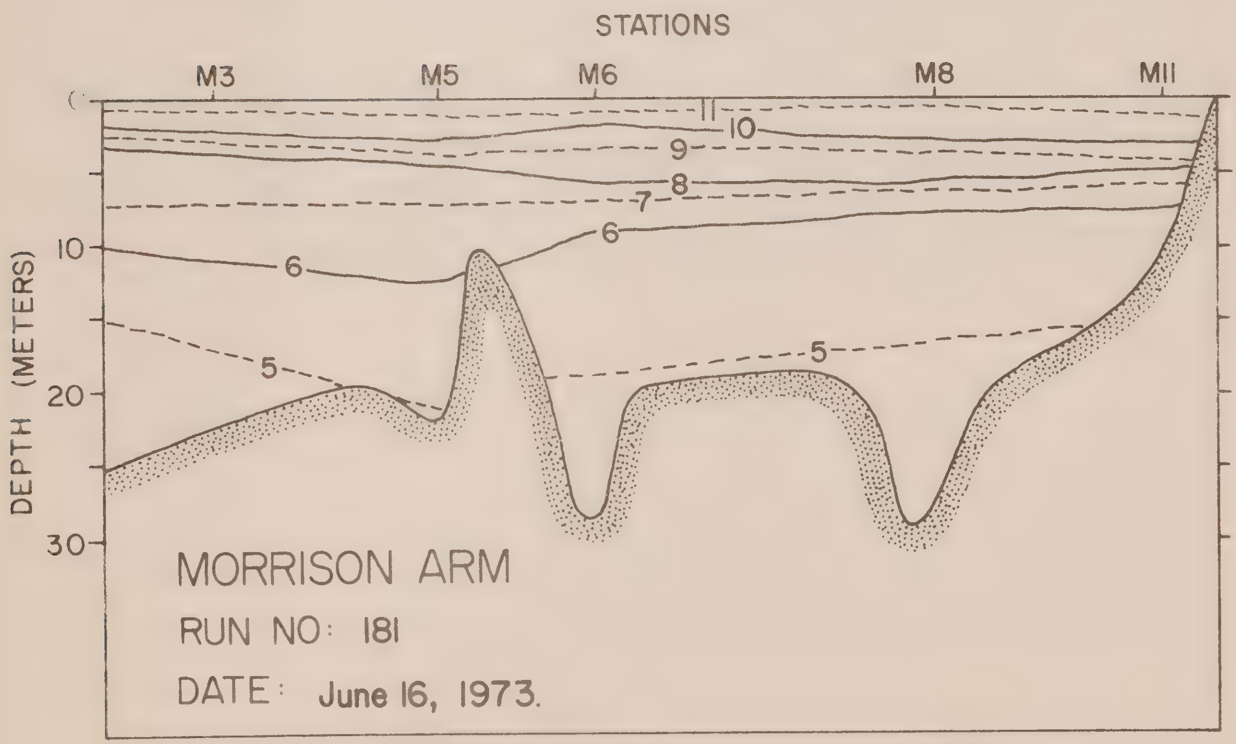

STATIONS
62/1
62/2
62/3
62/4
0
50
100
DEPTH (METERS)
7
6
5
4.5
4
BOLING POINT TRANSECT
RUN NO: 310
DATE: Oct. 19, 1973.

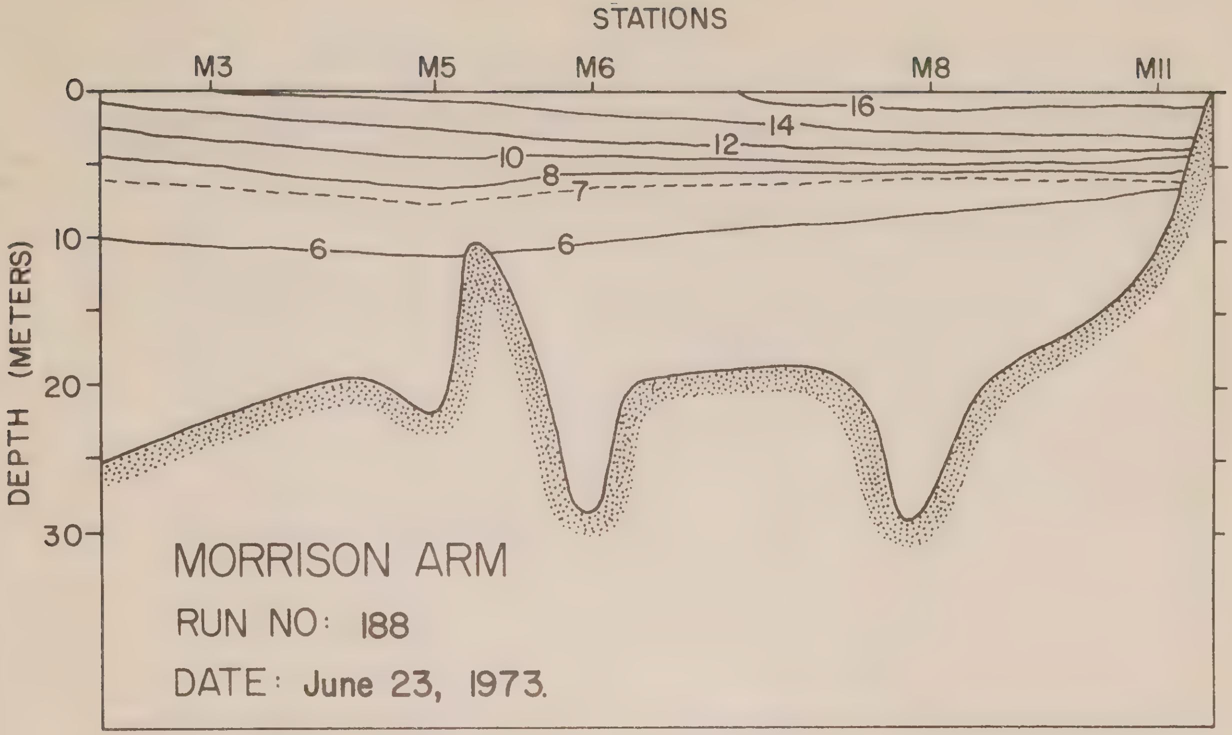
MORRISON ARM (MAY 26 - OCTOBER 27)

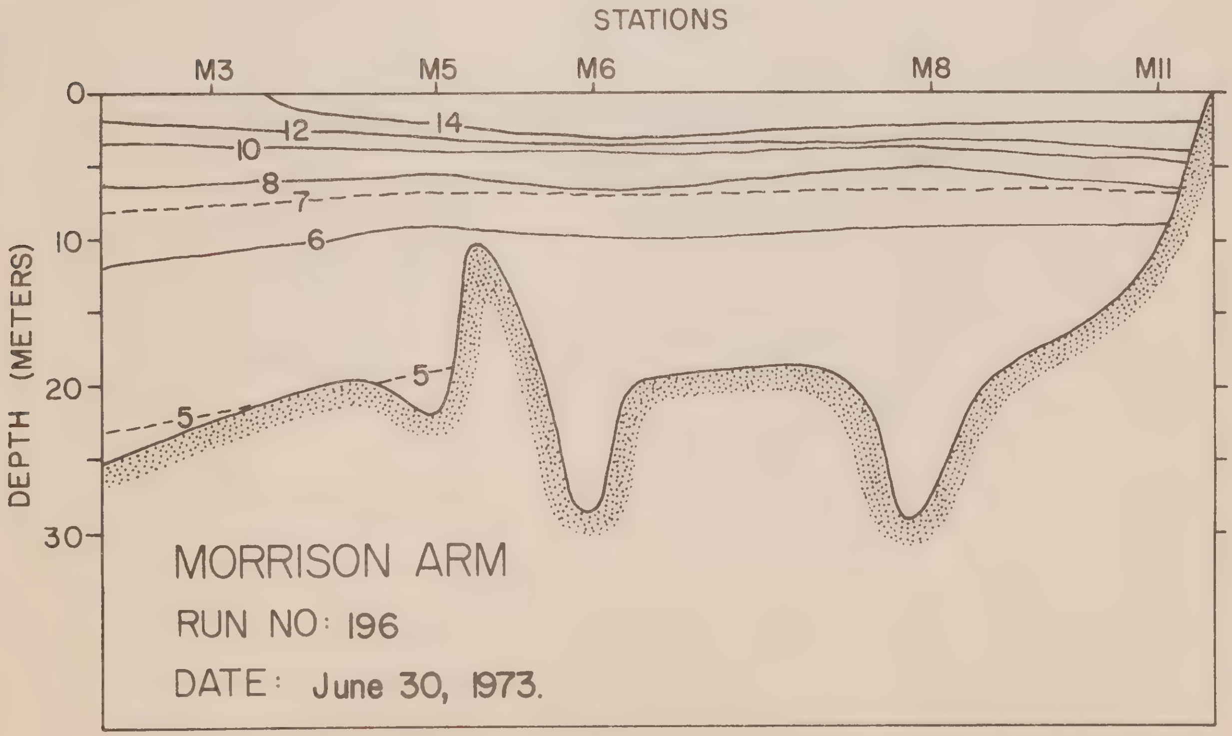

STATIONS
M3
M5
M6
M8
M11
0
10
20
30
DEPTH (METERS)
9
8
7
6
5
4.5
5
4.5
5
MORRISON ARM
RUN NO: 159
DATE: May 26, 1973.

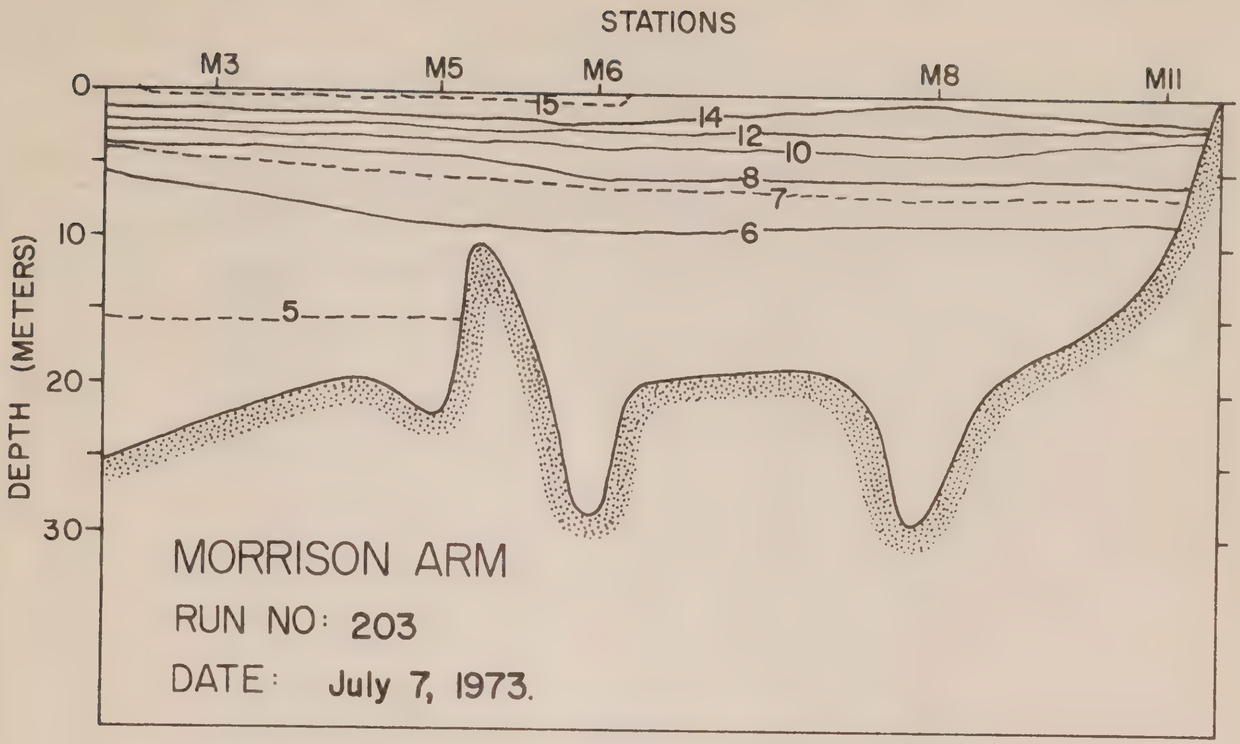

STATIONS
M3
M5
M6
M8
M11
0
10
20
30
DEPTH (METERS)
9
8
7
6
5
4.5
5
MORRISON ARM
RUN NO: 166
DATE: June 2, 1973.

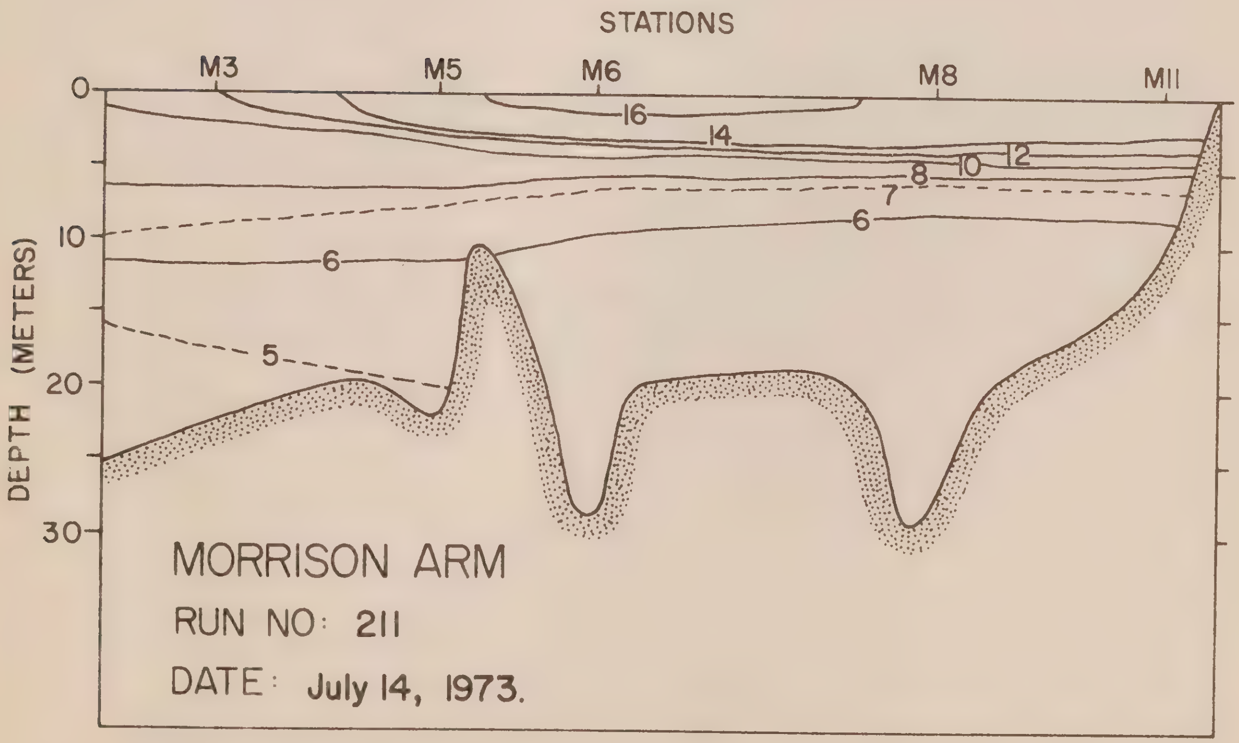

STATIONS
M3
M5
M6
M8
M11
DEPTH (METERS)
0
10
20
30
10
9
8
7
6
5
MORRISON ARM
RUN NO: 174
DATE: June 9, 1973.

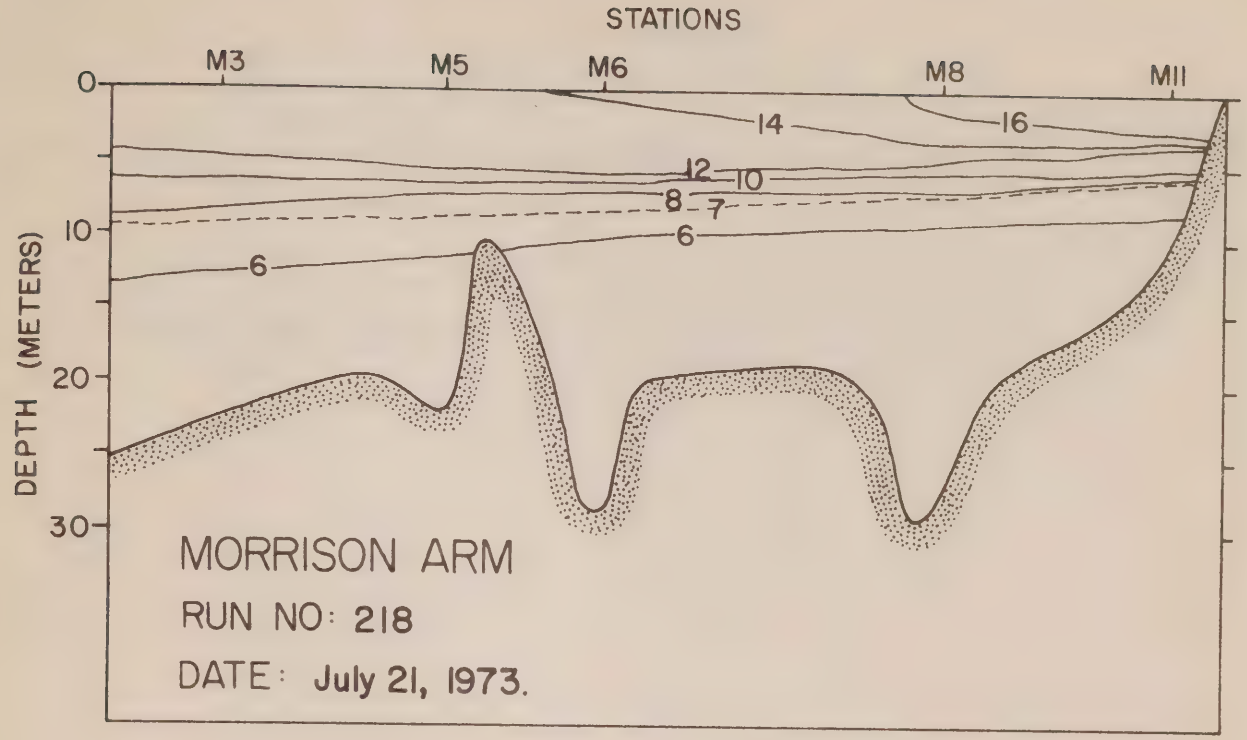

STATIONS
M3
M5
M6
M8
M11
DEPTH (METERS)
10
20
30
11
10
9
8
7
6
5
MORRISON ARM
RUN NO: 181
DATE: June 16, 1973.

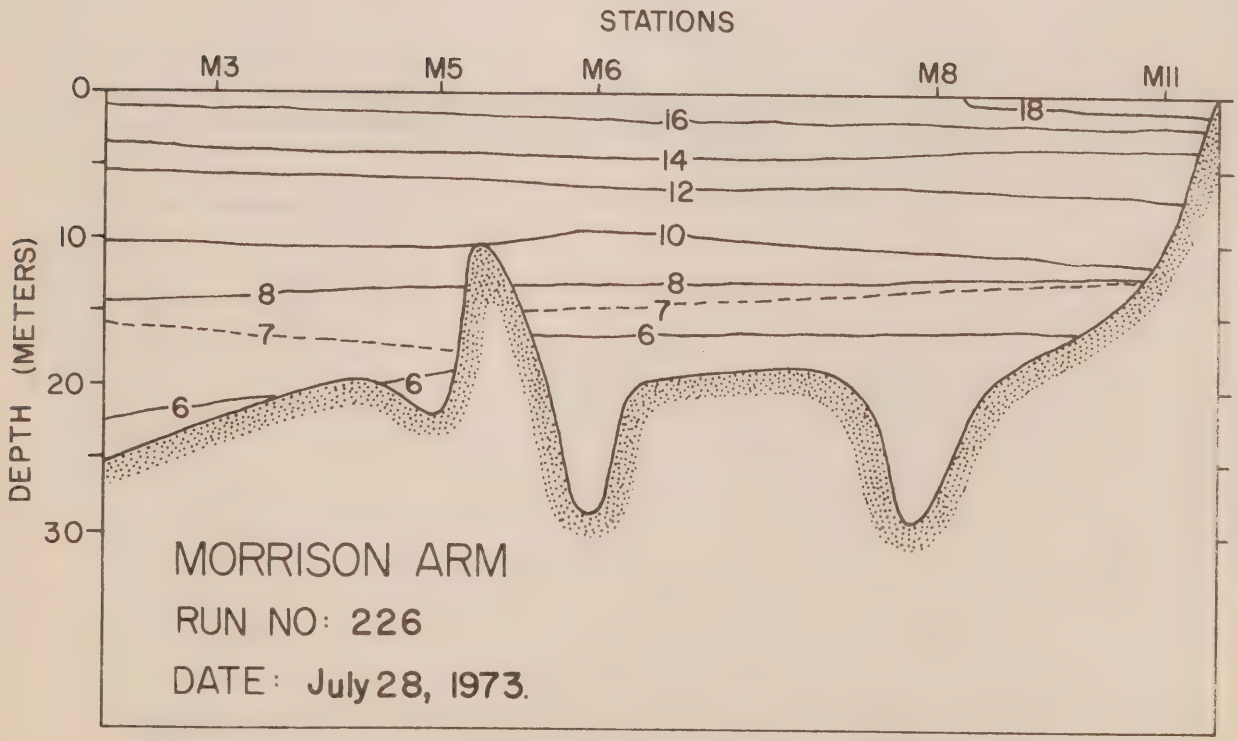

STATIONS
M3
M5
M6
M8
M11
DEPTH (METERS)
0
10
20
30
16
14
12
10
8
7
6
6
MORRISON ARM
RUN NO: 188
DATE: June 23, 1973.

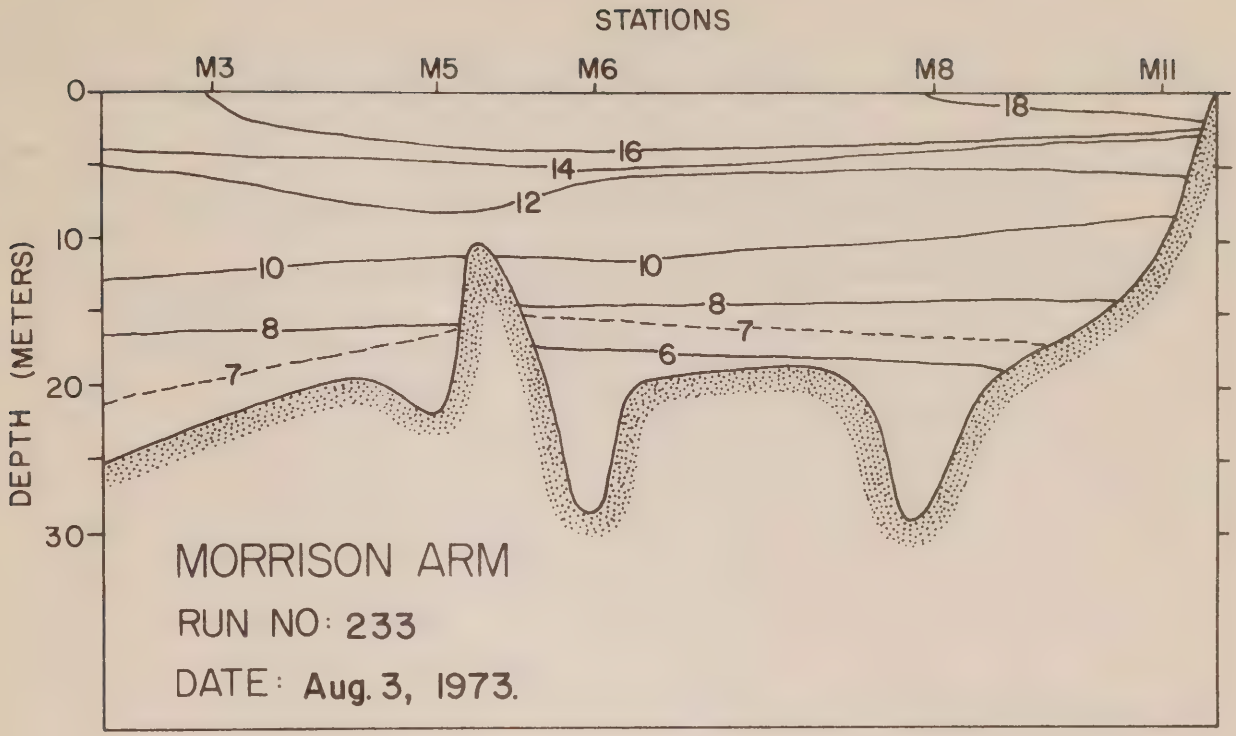

STATIONS
M3
M5
M6
M8
M11
DEPTH (METERS)
0
10
20
30
14
12
10
8
7
6
5
5
MORRISON ARM
RUN NO: 196
DATE: June 30, 1973.

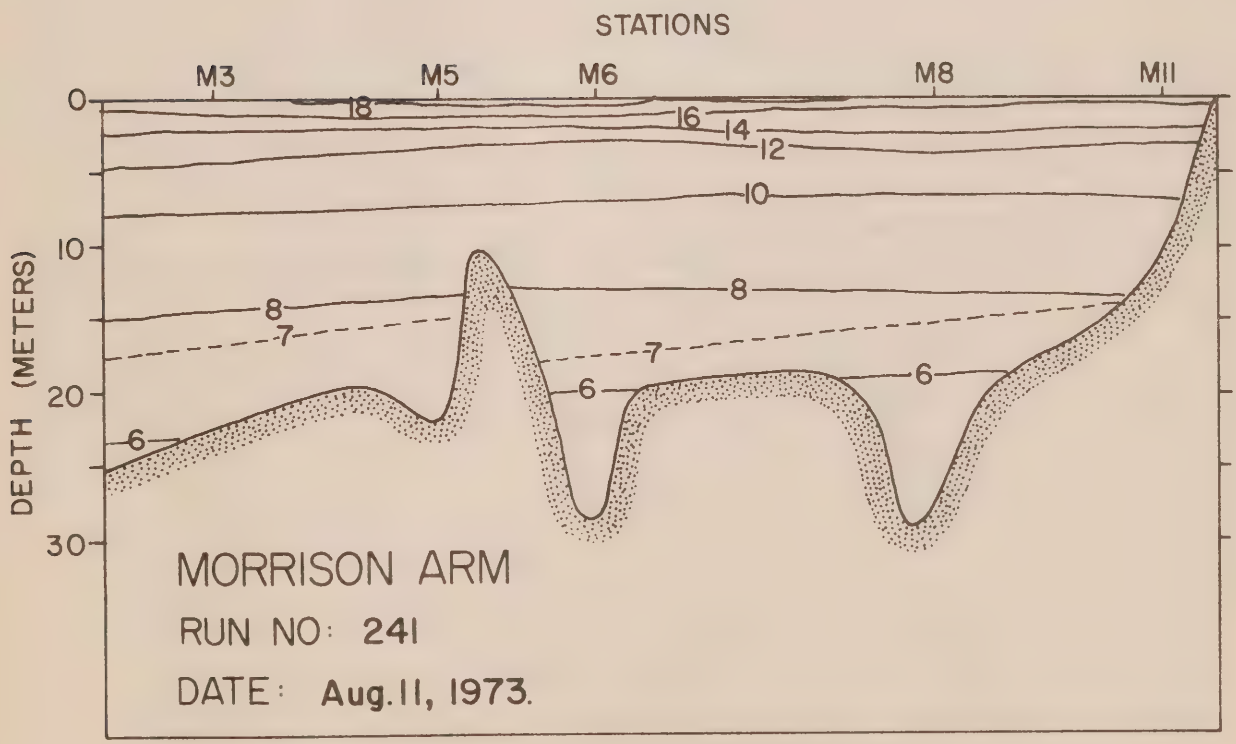

STATIONS
M3
M5
M6
M8
M11
0
10
20
30
DEPTH (METERS)
15
14
12
10
8
7
6
5
MORRISON ARM
RUN NO: 203
DATE: July 7, 1973.

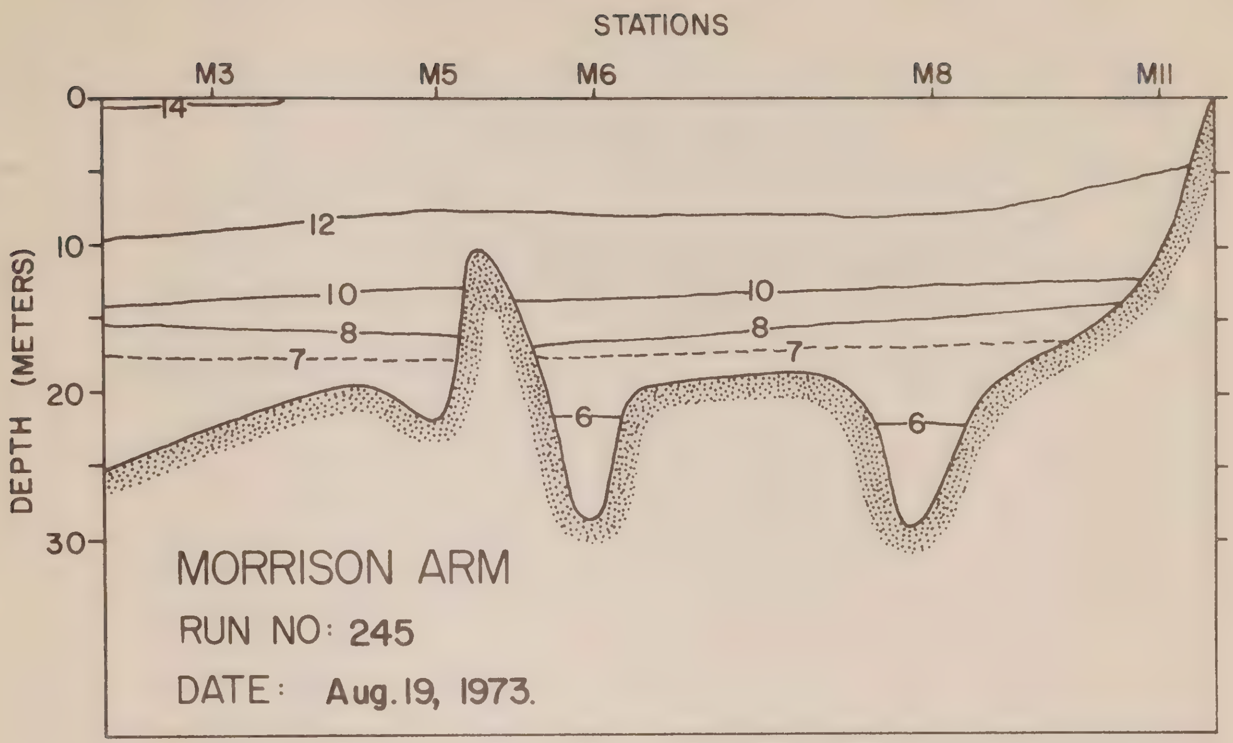

STATIONS
M3
M5
M6
M8
M11
0
10
20
30
DEPTH (METERS)
16
14
12
10
8
7
6
6
5
MORRISON ARM
RUN NO: 211
DATE: July 14, 1973.

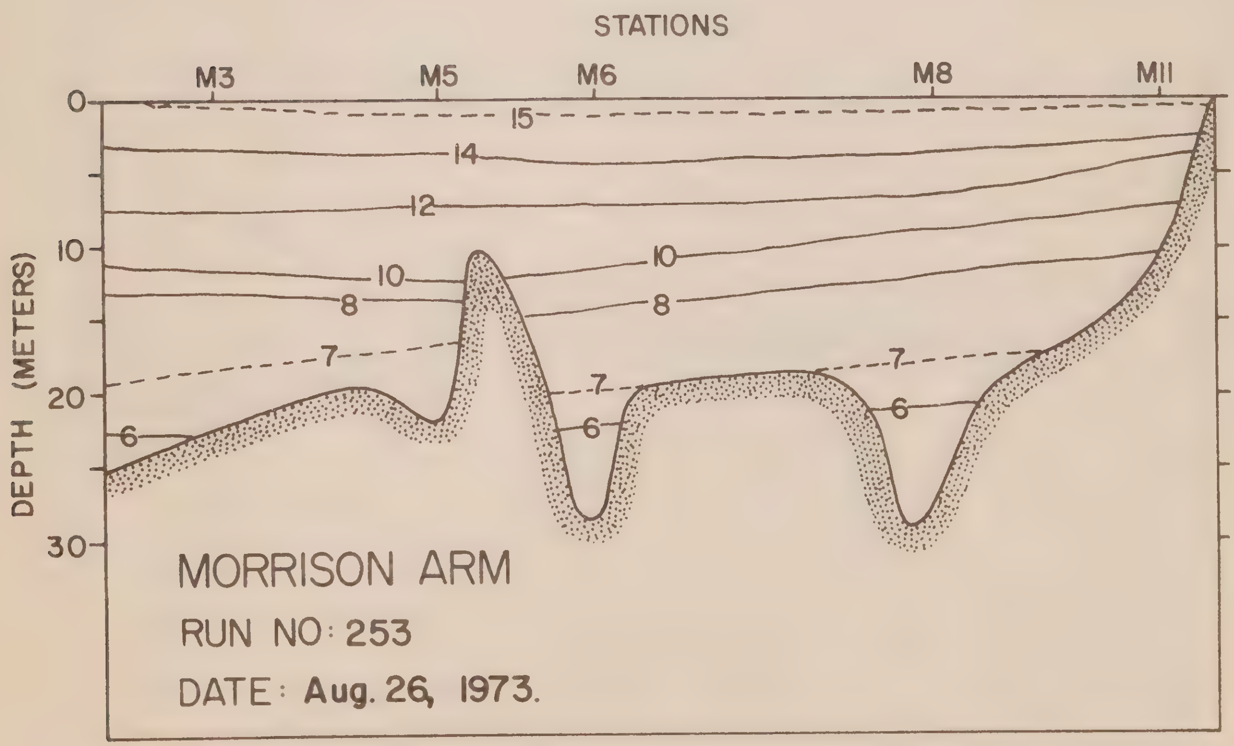

STATIONS
M3
M5
M6
M8
M11
0
10
20
30
DEPTH (METERS)
14
16
12
10
8
7
6
6
MORRISON ARM
RUN NO: 218
DATE: July 21, 1973.

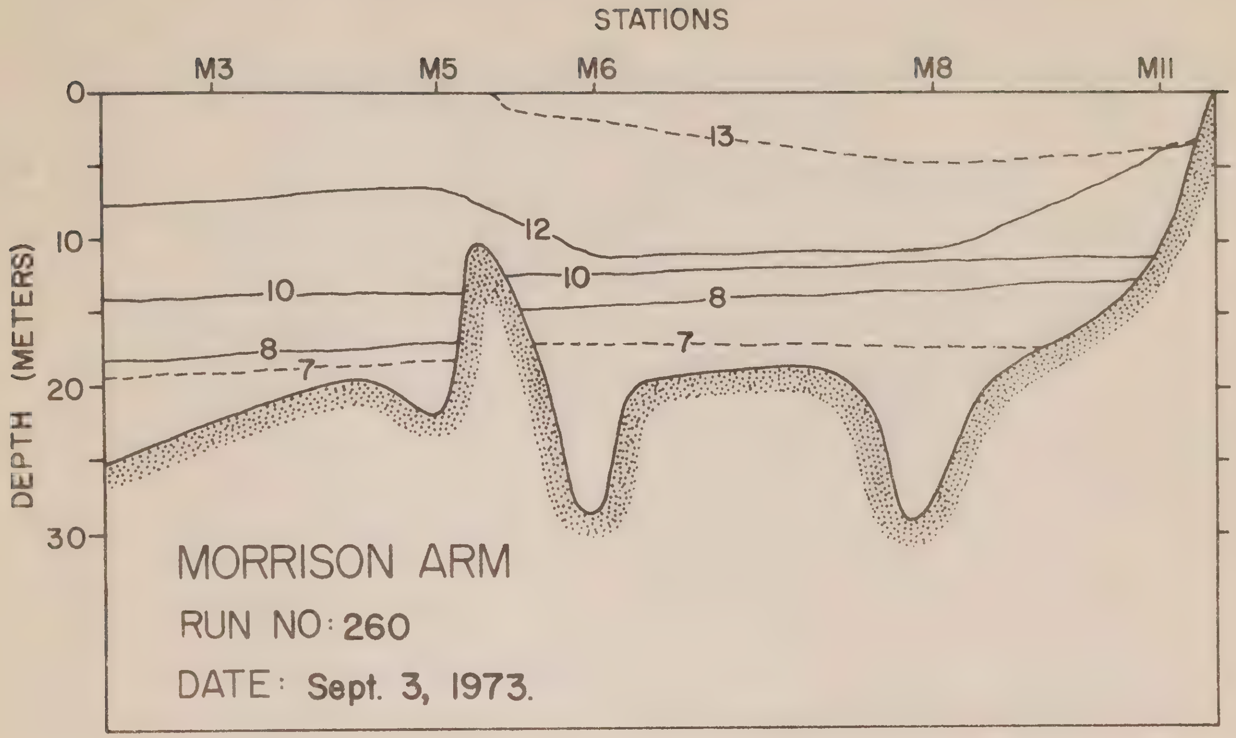

STATIONS
M3
M5
M6
M8
M11
0
10
20
30
DEPTH (METERS)
16
18
14
12
10
8
8
7
7
6
6
6
MORRISON ARM
RUN NO: 226
DATE: July 28, 1973.

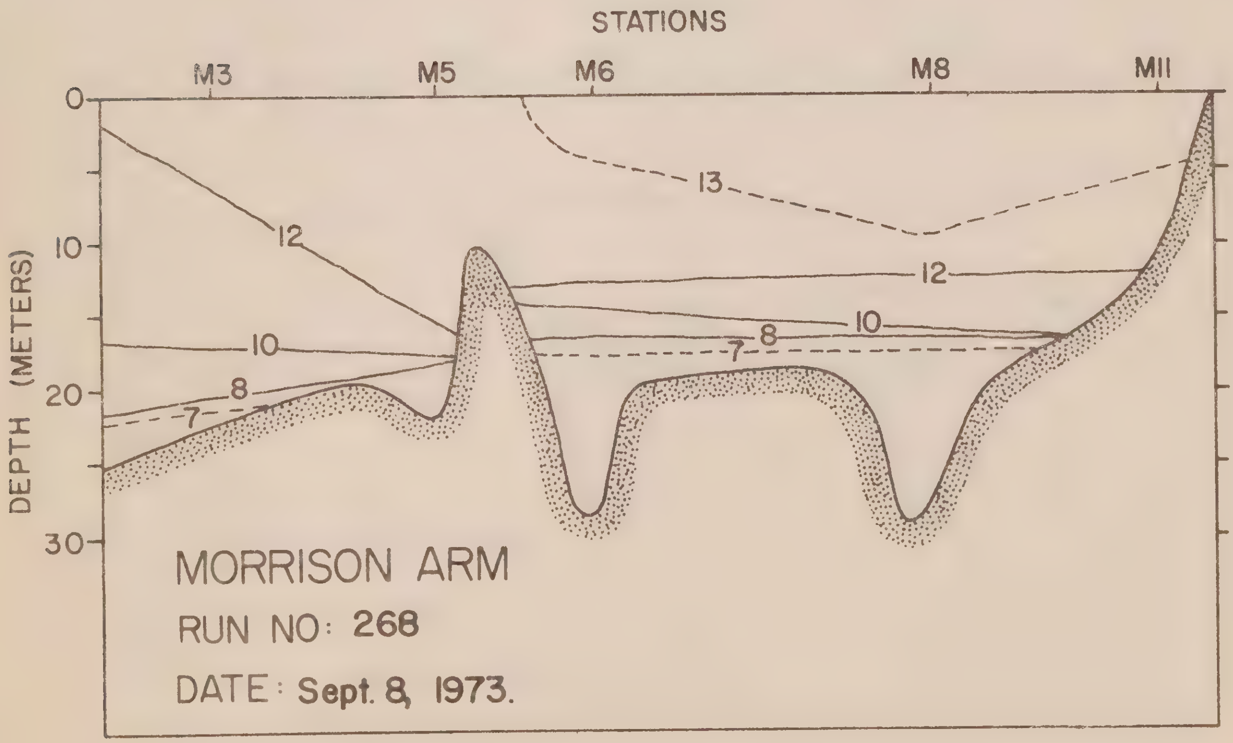

STATIONS
M3
M5
M6
M8
M11
DEPTH (METERS)
0
10
20
30
18
16
14
12
10
8
7
6
MORRISON ARM
RUN NO: 233
DATE: Aug. 3, 1973.

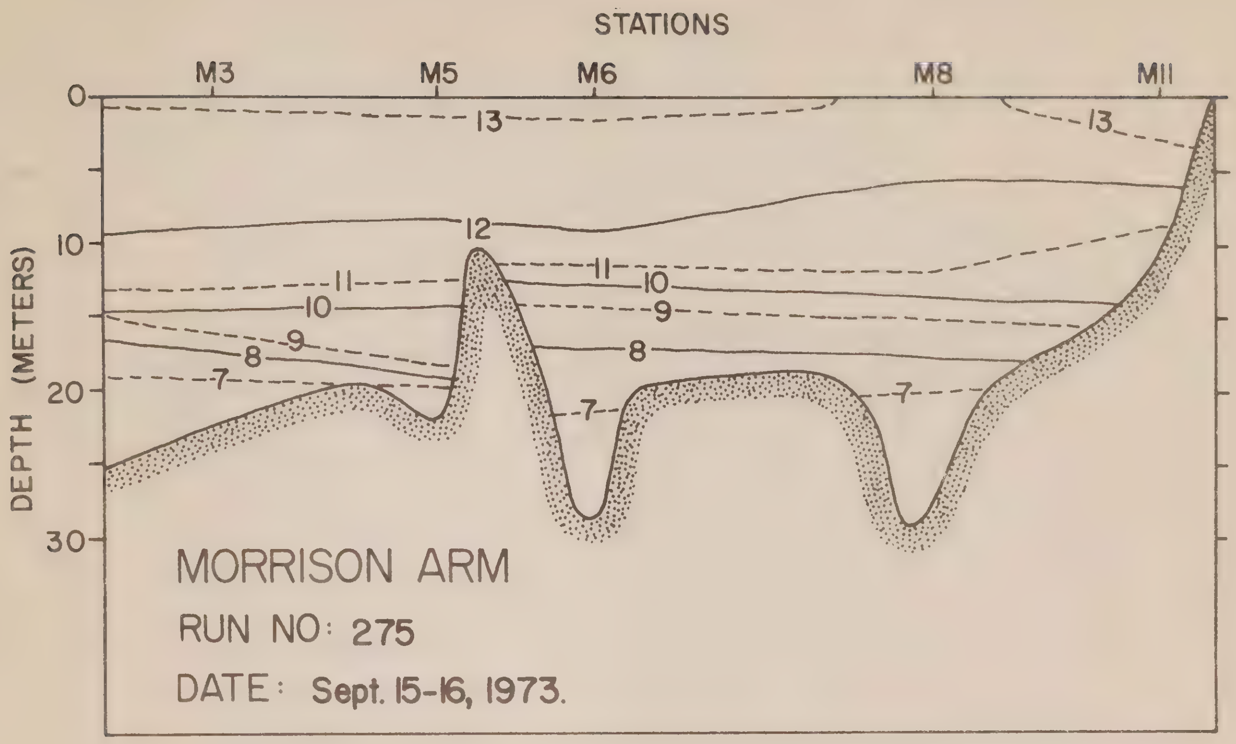

STATIONS
M3
M5
M6
M8
M11
DEPTH (METERS)
0
10
20
30
18
16
14
12
10
8
7
6
MORRISON ARM
RUN NO: 241
DATE: Aug. 11, 1973.

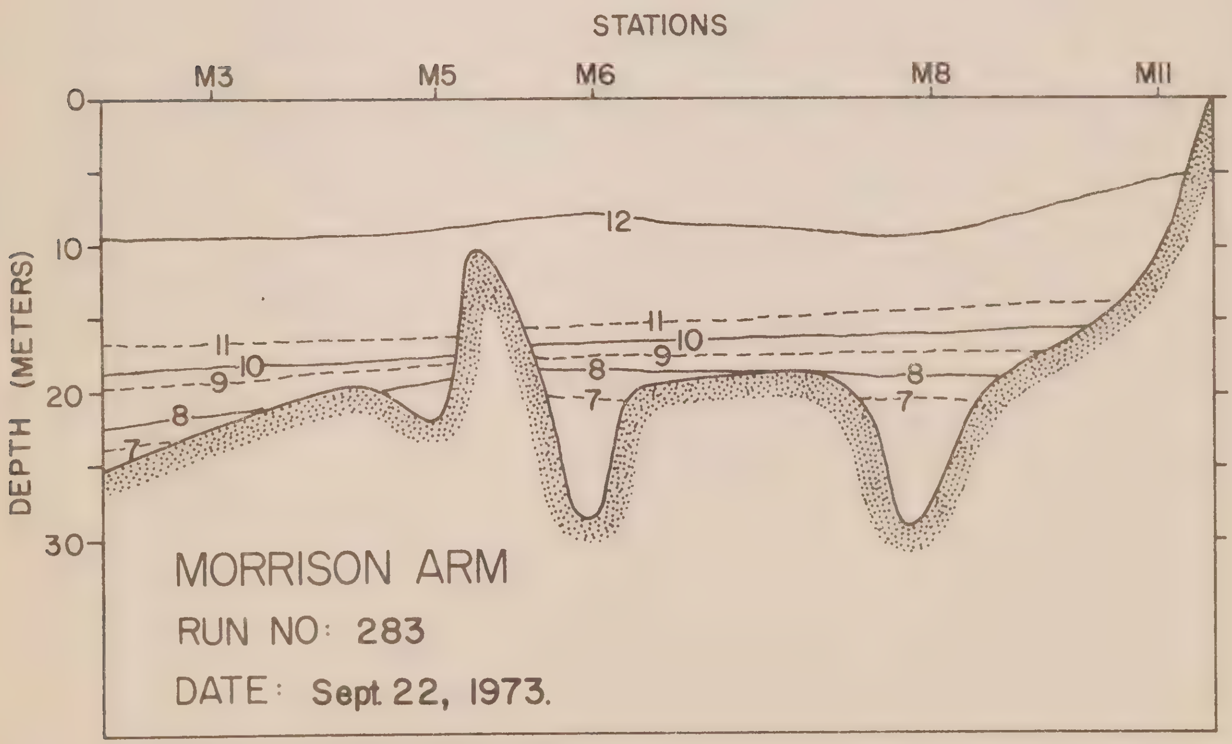

STATIONS
M3
M5
M6
M8
M11
0
10
20
30
DEPTH (METERS)
14
12
10
8
7
6
MORRISON ARM
RUN NO: 245
DATE: Aug. 19, 1973.

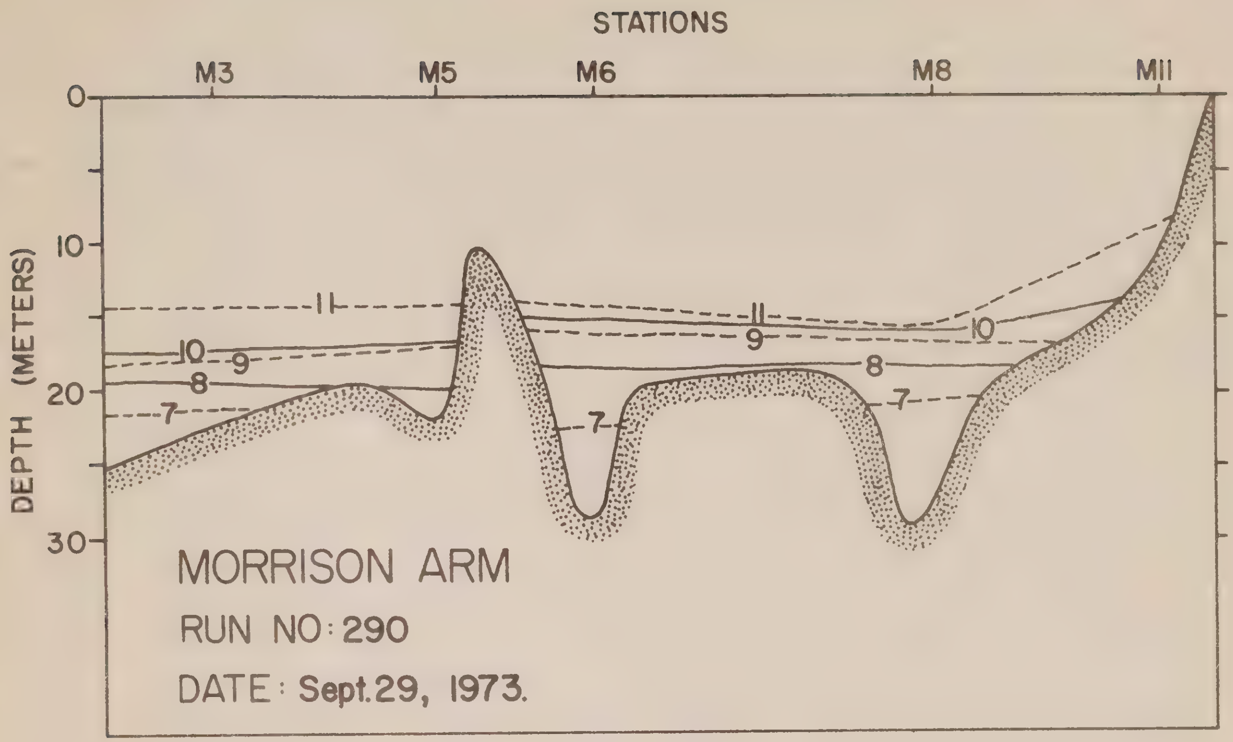

STATIONS
M3
M5
M6
M8
M11
0
10
20
30
DEPTH (METERS)
15
14
12
10
8
7
6
MORRISON ARM
RUN NO: 253
DATE: Aug. 26, 1973.

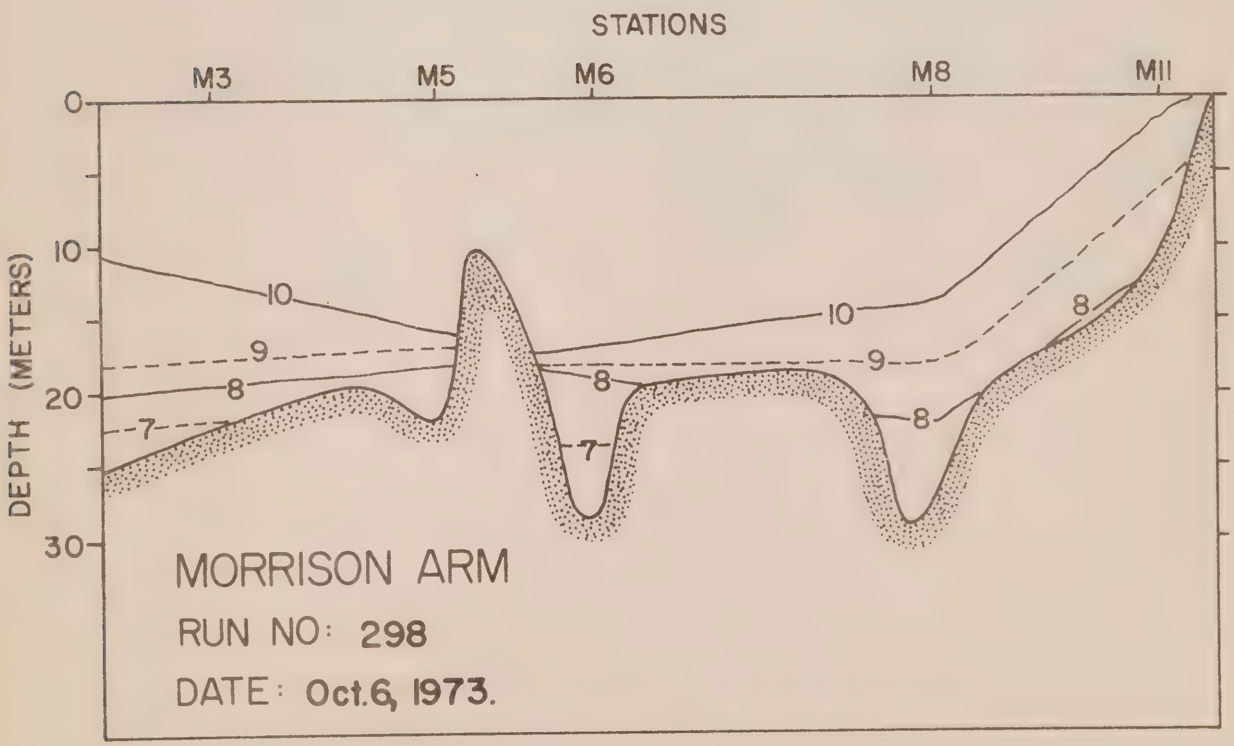

STATIONS
M3
M5
M6
M8
MII
0
10
20
30
DEPTH (METERS)
13
12
10
10
8
8
7
7
MORRISON ARM
RUN NO: 260
DATE: Sept. 3, 1973.

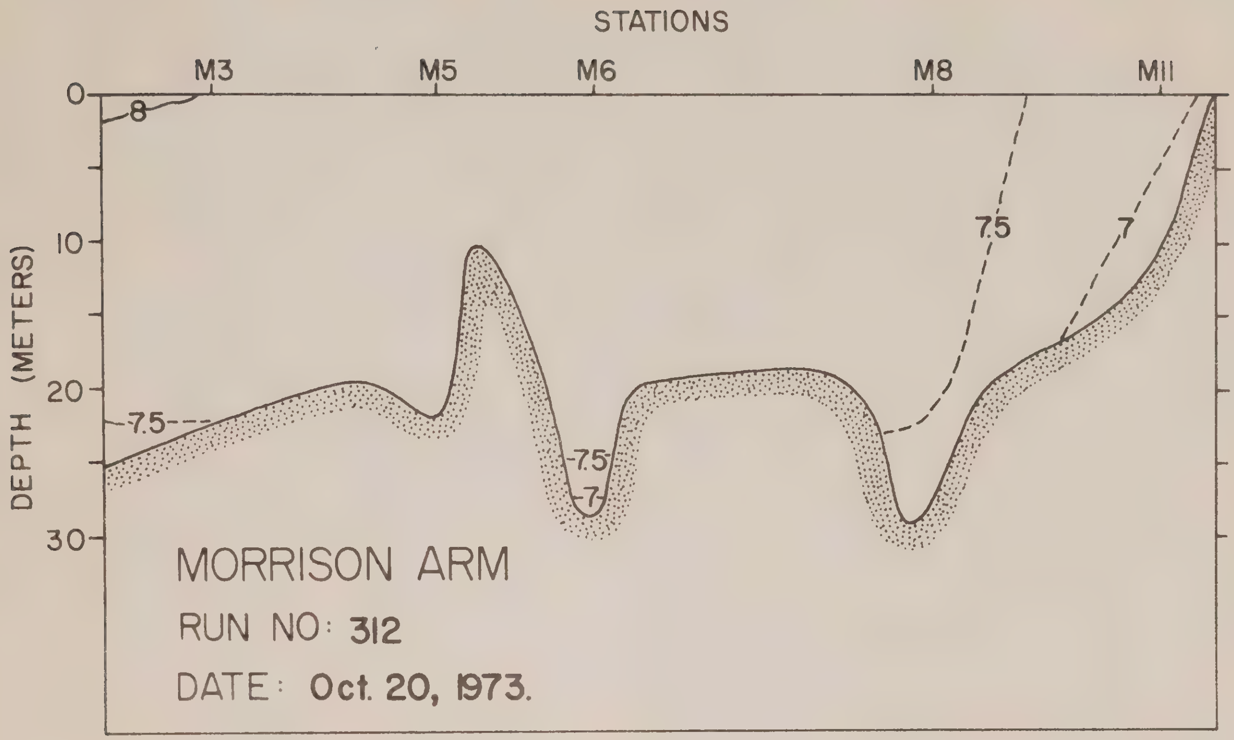

STATIONS
M3
M5
M6
M8
MII
0
10
20
30
DEPTH (METERS)
13
12
12
10
10
8
8
7
7
MORRISON ARM
RUN NO: 268
DATE: Sept. 8, 1973.

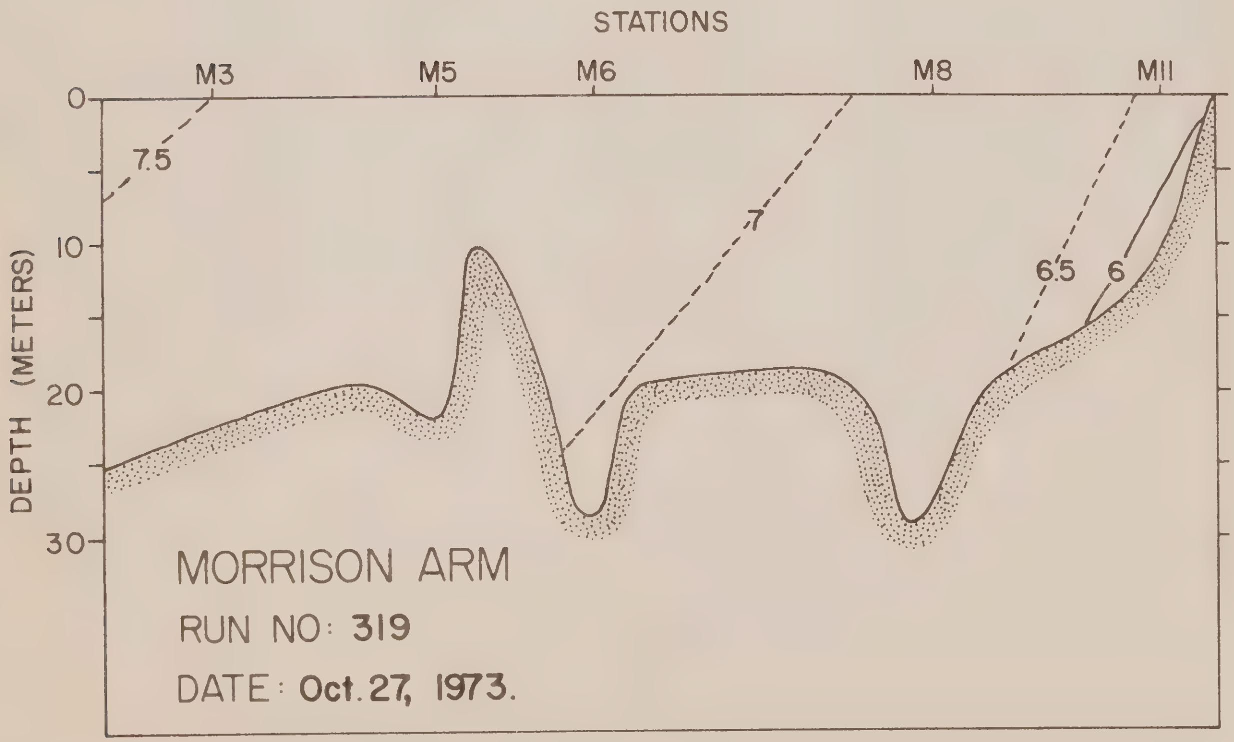

STATIONS
M3
M5
M6
M8
M11
DEPTH (METERS)
0
10
20
30
13
12
11
10
9
8
7
MORRISON ARM
RUN NO: 275
DATE: Sept. 15-16, 1973.


STATIONS
M3
M5
M6
M8
M11
DEPTH (METERS)
0
10
20
30
12
11
10
9
8
7
MORRISON ARM
RUN NO: 283
DATE: Sept 22, 1973.


STATIONS
M3
M5
M6
M8
M11
0
10
20
30
DEPTH (METERS)
11
10
9
8
7
MORRISON ARM
RUN NO: 290
DATE: Sept.29, 1973.


STATIONS
M3
M5
M6
M8
M11
0
10
20
30
DEPTH (METERS)
10
9
8
7
MORRISON ARM
RUN NO: 298
DATE: Oct.6, 1973.


STATIONS
M3
M5
M6
M8
MII
0
10
20
30
DEPTH (METERS)
8
7.5
7.5
7
7.5
7
MORRISON ARM
RUN NO: 312
DATE: Oct. 20, 1973.


STATIONS
M3
M5
M6
M8
MII
0
10
20
30
DEPTH (METERS)
7.5
7
6.5
6
MORRISON ARM
RUN NO: 319
DATE: Oct. 27, 1973.